VIDE-V10333

PEACOCK

PEACOCK AG
GRAF ZEPPELIN-STR.14
D-33181 Wünnenberg-Haaren

SERVICE-MANUAL

MONITOR

PM 15P64 LR

15 PRO

COMPAL TX-562 DU
NYTECH NM15P64LR
TARGA TM-3820 PNLD

Druck + Vertrieb:

Schaltungsdienst Lange o.H.G.

Verlag Technischer Druckschriften
Postfach 47 06 53 . D-12315 Berlin
Tel. (49) 30 / 723 813 FAX (49) 30 / 723 81 500

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APPENDIX A: P.C.B. ASSEMBLY

APPENDIX B: DISPLAY UNIT ASSEMBLY

APPENDIX C: CRT & YOKE ASSEMBLY

WARNING

1) This product contains components which are critical for X-radiation safety. Read the service manual carefully for proper replacement. Maximum 2nd anode voltage use high impedance meter, connect (-) to chassis, use a high voltage lead from (+) to 2nd anode.

2) Critical Components are marked with the symbol of ⚠ in the material list. For continued protection against X-radiation, replace only with same type and rating components.

3) Critical components are marked with the symbol of # in the material list. For continued protection against Low Radiation, replace only with same part number.

1.0 INTRODUCTION

The monitor is a 15" ultra high resolution multi-scanning color monitor designed specifically for a wide range of videos standard for computers and its compatible professional applications.

The monitor produces clear color images at resolutions from standard VGA to 1280x1024 has scanning frequencies from 30-65KHz (24-65KHz optional) in horizontal sweep and vertical refresh rates at 50-90Hz continuously. Front Panel user friendly digital controls provide flexibility.

This monitor is also designed with an optional power saving function to meet the VESA DPMS (Display Power Management Signaling) proposal.

2.0 INSTALLATION

Check the monitor adaptor of your personal computer system and compare the specifications with those of the monitor. If in doubt, contact your supplier. Be sure that power for both the personal computer system and the monitor is switched off-better if not even plugged in.

2.1 PROCEDURE:

a. Connect the video cable to the 15-pin female connector of the video adaptor at the rear of the personal computer system. Lock both screws to ensure proper connection.

b. The voltage regulation of the monitor is indicated on the marker plate at the back. Compare this with the power supply at location.

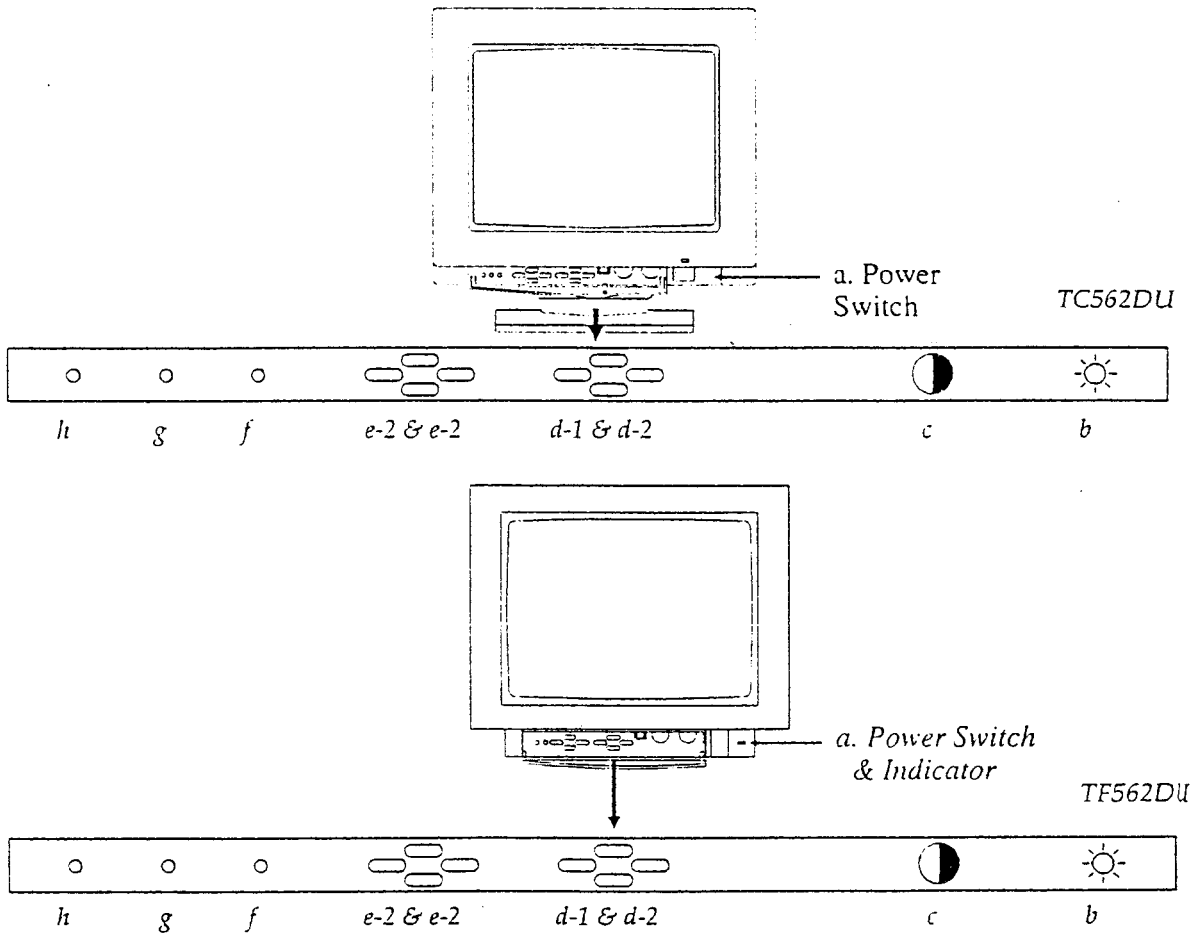
c. The monitor is equipped with a three-wire power cord and a third- pin earthed plug. Make sure that the power outlet is a earthed type as well.

d. Connect the power cord with the AC-plug at the back of the monitor. Because of its relatively high power consumption, the powercord of the color-monitor is either to be plugged directly into a wall-mounted AC-outlet or to be plugged into the PC power supply.

e. Turn on the power switches of both the personal computer and the monitor.
Visually verify the presence of power by checking the "power-on" indicator.
It will take about 30 seconds to warm up the monitor.

f. Put a data pattern on the screen and adjust brightness and contrast to a level comfortable to your eyes.

2.2 FRONT CONTROLS



a. Power Switch & Indicator
The power switch is a push-push type button. Use the power switch to turn power ON or OFF. When the power is ON, the power indicator will be lit.

b. Brightness

Used to adjust the picture brightness of screen.

c. Contrast

Adjust the display to the contrast preferred.

d-1. Hor. position – digital control, left/right

Adjust the proper horizontal position if needed.

d-2. Vert. position – digital control, up/down

Adjust the proper vertical position if needed.

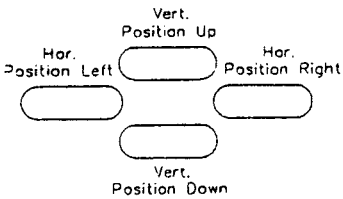


Fig. d-1 & d-2

e-1. Hor. Size – digital control, increase/decrease

Adjust the horizontal width to the proper width, if needed.

e-2. Vert. Size – digital control, increase/decrease
Adjust the proper vertical height if needed.

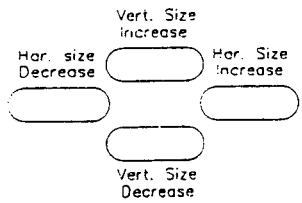
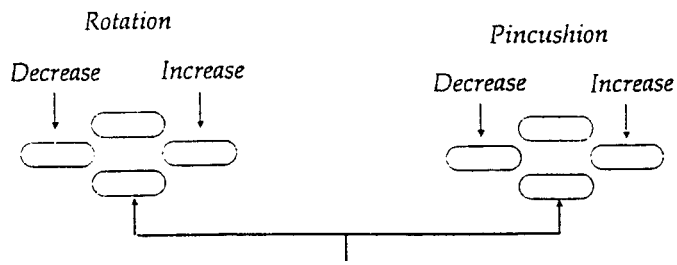


Fig. e-1 & e-2

f. Reset control – digital control
Recalls the preset picture followed by the preset timing specified in specification.

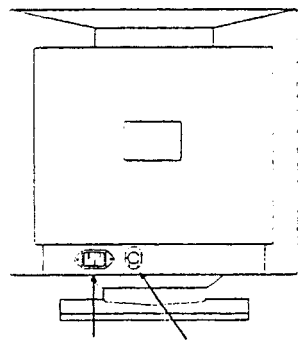
g. Manual degaussing switch
Used to degauss the CRT.

h. Pincushion and Rotation control LED indicator
h.1 1st mode LED OFF: key function defined as item d. e.
h.2 2nd mode LED ON: key function defined as pincushion and rotation control.
h.3 Pincushion CONTROL : Hor. position left= Pincushion Decrease
Hor. position right= Pincushion Increase
h.4 Rotation CONTROL: Hor. size increase=Rotation picture clock wise
Hor. size decrease=Rotation picture counter clock wise



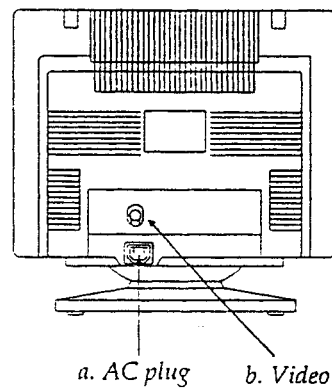
Control mode selector: Push these two buttons to choose desired mode.

2.3 REAR COVER SETTINGS



a. AC plug *b. Video cable*

TC562DU



a. AC plug *b. Video cable*

TF562DU

a. AC line input plug

b. Video cable

2.4. CONTROLS AND SETTINGS

In order to complete the picture you need, please follow these steps when you turn thepowe ON:

a.Here are nine modes of timing to be automatically preset by this monitor. Once the reset key have been activated at the auto situation, you need not do any effective controls to the picture size and position at the front panel; you can have the correct picture if the video card you used is matched with the following modes specified in specifications; if not, please execute manual actions(see the next step).

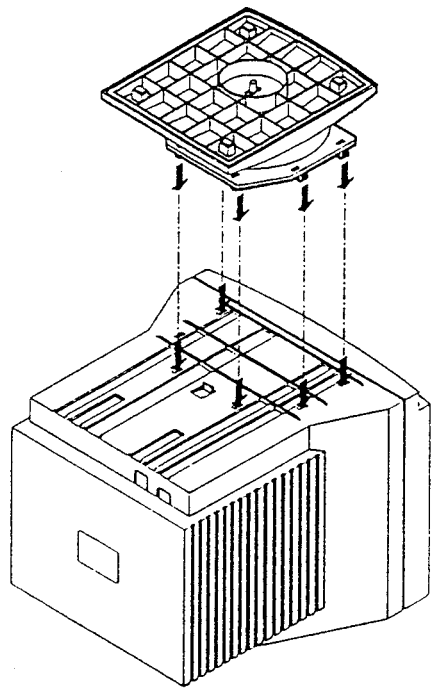
MODE	RESOLUTIONS	FH(Hz)	FV(Hz)
VGA	640x480	31.5K	60
VGA	720x400	31.3K	70
VGA	640x350	31.5K	70
SVGA	800x600	35.2K	56
IBM 8514A	1024x768	35.5K	87
VESA	800x600	37.9K	60
VESA	800x600	48.0K	72
VESA	1024x768	48.3K	60
VESA	1024x768	56.4K	70
PC9800	720x400	24.8	56 (optional)

b. To adjust the horizontal/vertical size or position, please push the corresponding control key as indicated in the front panel. The picture will be auto-memorizied in three (3) seconds after the abjustment is completed.

c. If the picture appears obscure, non-uniform in color or poor in contrast and brightness, please push the degaussing switch for about three (3) seconds then release to get a good picture.

2.5 ATTACH THE MONITOR TO ITS BASE

The base has four tabs - two at the front of its top and two at the rear. Insert the two front tabs in their slots on the bottom of the monitor. Slide the base toward the front of the monitor until the rear tabs enter their slots. Be sure the base is firmly attached.



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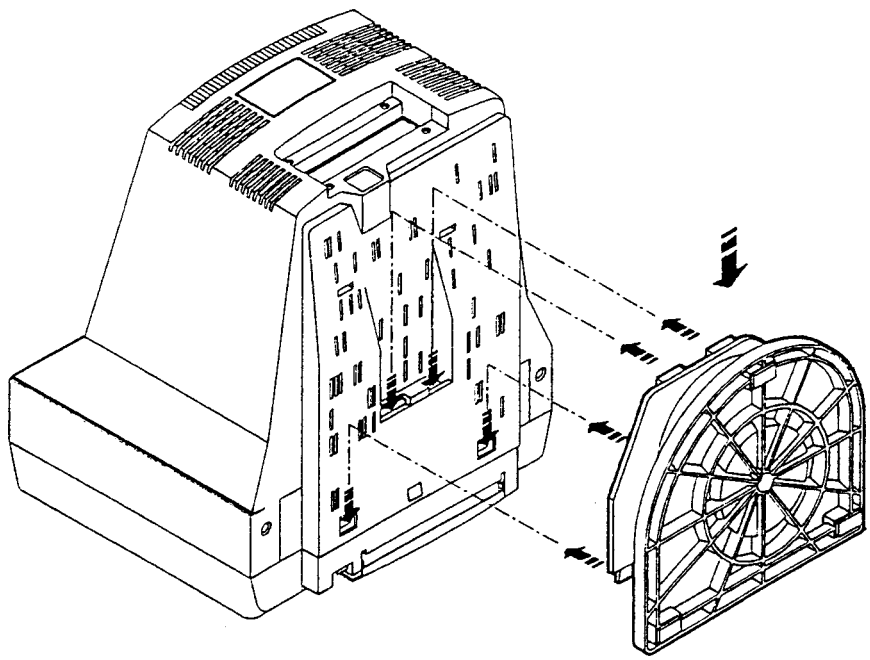


TF562DU

3.0 SPECIFICATION

3.1 CATHODE RAY TUBE

Type	: 15 inchs, 90 degrees, 29.1 mm, tint, non-glare.
Phosphor	: WTDS NO.X or Equivalent.
Dot-pitch	: 0.28 mm.(Approx.)
Transmission	: 57.5% at center.
Arrangement	: R-G-B HORIZONTAL IN-LINE.
Persistence	: Medium short.

3.2 INPUT SIGNALS

3.2.1 VIDEO SIGNALS

Type	Analog R, G, B, direct drive.
I/P impedance	approximate 75 ohms.
Polarity	positive.
Amplitude	0 - 0.7 ± 0.05 V.
Display color	unlimited

3.2.2 SYNCHRONOUS INPUTS

Signal	TTL Level.
Polarity	Separate horizontal +/-, vertical +/-,

3.2.3 INTERFACE FREQUENCY

Horizontal frequency :	30KHz - 65KHz. (24KHz - 65KHz optional)
Vertical frequency:	50Hz -90Hz.

3.3 POWER SUPPLY

Power source : 90 - 260 Vac, 47 - 63 Hz.
Input current : 1.4A max. at 90-260V
Ripple /Noise : No interference or jitter.
Power consume(include power saving) : Meet VESA DPMS proposal define as following

VESA definition			COMPAL specification	
MODE	H-SYNC	V-SYNC	POWER INPUT	RECOVERY TIME
ON	pulses	pulses	NORMAL	(blank)
STANDBY	no pulses	pulses	MUTE	1 SEC
SUSPEND	pulses no	pulses	UNDER 15W	5 SEC
OFF	no pulses	no pulses	UNDER 5W	20 SEC

pulses	for H-SYNC means frequency > 10 KHz with less than 25% duty cycle for V-SYNC means frequency > 20 Hz with less than 25% duty cycle.
no pulses	defined as less than 10 Hz repetition rate with less than 25% duty cycle.
NORMAL	(1)NORMAL CRT = 83W MAX. at 90 Vac (2)LOW RADIATION CRT = 88W MAX. at 90 VAC
MUTE	Typically Save 5-12W from NORMAL power
UNDER 15W	test at 90 Vac ~ 260 Vac
UNDER 5W	test at 90 Vac ~ 260 Vac

3.4 SIGNAL CABLE

Connector : 15 pin, D-type, male connector.

Pin no.	Allocation
1.	R video.
2.	G video.
3.	B video.
4.	ID BIT2(GND).
5.	NC.
6.	R ground
7.	G ground
8.	B ground
9.	NC.
10.	Digital ground
11.	ID BIT0(GND)
12.	ID BIT1(NC)
13.	Horizontal sync.
14.	Vertical sync.
15.	NC.

3.5. PERFORMANCE

3.5.1 DEGAUSSING

Auto-degaussing when power on & Manual degaussing.

3.5.2 EXTERNAL CONTROLS -- USER ACCESSIBLE

3.5.3 ACCESSIBLE ON FRONT PANEL

POWER SWITCH :	turn ON or turn OFF monitor.
CONTRAST VR :	tuning good contrast of picture.
BRIGHTNESS VR :	tuning luminance of picture.
V-CENT CONTROL :	correct picture deviation vertically caused by timing difference among video Graphics Adapters.
H-PHASE CONTROL :	correct picture deviation horizontally caused by timing difference among video Graphics Adapters.
V-SIZE CONTROL :	adjust the height of display area.
H-WIDTH CONTROL :	adjust the width of display area.
RESET CONTROL :	recalled the presetting mode.
SIDE-PIN CONTROL:	correct the pincushion of both sides.
TILT CONTROL :	correct the tilt of picture.
MANUAL DEGAUSSING:	clean the picture of effect by magnetic field.

3.5.4 RESOLUTION

Horizontal: 1280 dots.

Vertical : 1024 lines.

3.5.5 ACOUSTICAL NOISE

No objectionable noise when monitor is working.

3.6 DISPLAY LUMINANCE CONTROL LEVEL

3.6.1 THE MINIMUM LUMINANCE LEVEL

The luminance of display shall not exceed 0 F-L when the external CONTRAST and BRIGHTNESS control have adjusted at minimum position with full-intensity reverse pattern in any display mode.

3.6.2 THE MAXIMUM LUMINANCE LEVEL

The luminance of display shall not less than 25 F-L when the external CONTRAST and BRIGHTNESS control have adjusted at maximum position with full-intensity reverse pattern in any display mode.

3.6.3 RASTER LUMINANCE LEVEL

The luminance of raster, generated by supplying H-sync and V-sync only in an display mode, shall not more than 3 F-L when the external BRIGHTNESS and CONTRAST control have adjusted at maximum position.

3.7 WHITE BALANCE

Set the external BRIGHTNESS at the point that raster just cut off, adjust CONTRAST over the range from 5F-L to 20F-L,or reversed,with full-intensity reverse pattern, the color coordinate,measured by MINOLTA TV-COLOR ANALYZER-II(TV-2130), shall be within the limitation listed below:

$x=0.281 \pm 0.025$

(At 5 F-L and 20 F-L)

$y=0.311 \pm 0.025$

3.8 BRIGHTNESS UNIFORMITY

The external CONTRAST and BRIGHTNESS control shall be properly adjusted at 20 F-L with full-intensity reverse pattern, the difference of luminance at any point in the screen shall not exceed 40 percent from center of CRT.

3.9 FOCUS

The CONTRAST and BRIGHTNESS control shall be properly adjusted, in VGA 640 x 480 , at 20 F-L with Full-intensity reverse pattern then change to crosshatch Pattern, there shall be sharp focus over the entire viewable area, also any two adjacent characters shall be clearly distinguishable.

3.10 PIXEL MOVEMENT (JITTER)

There shall be not more than 1 dot movement horizontally or vertically.

3.11 MISCONVERGENCE

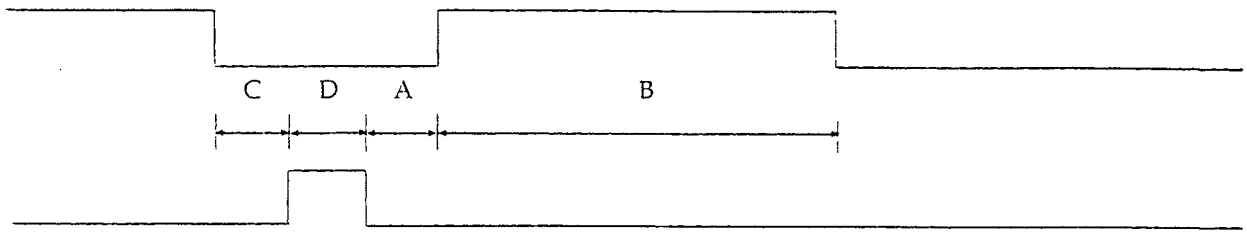
The CONTRAST and BRIGHTNESS control shall be properly adjusted ,in 640 x 480 display mode, at 20 F-L with Full-intensity reverse pattern then change to crosshatch Pattern, the misconvergence shall: (measured by KLEIN gauge)

a) less than 0.30 mm in a centrally located area bounded by a circle which diameter equals the display height.

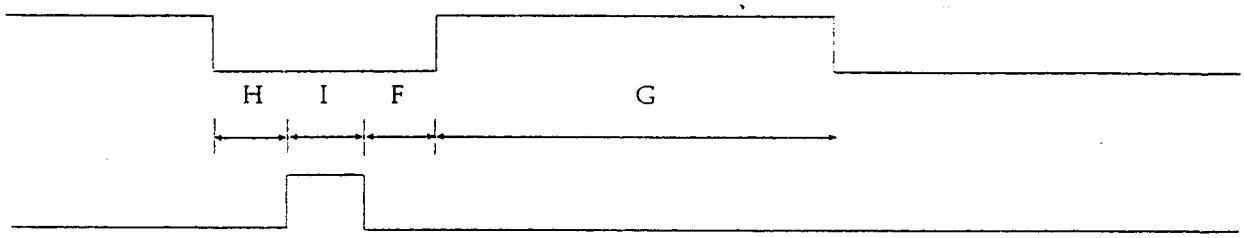
b) less than 0.40 mm elsewhere on the screen.

3.12 INTERFACE TIMINGS :

Horizontal



Vertical



PICTURE	PRESETTING				
Parameters	VGA			SUPER-VGA	8514A
Vertical lines	350	400	480	600	768
Hori. frequency	31.47KHz	31.33KHz	31.47KHz	35.16KHz	35.52 KHz
A (μs)	1.907	1.907	1.907	3.556	1.247
B (μs)	25.421	25.420	25.421	22.222	22.807
C (μs)	0.635	0.776	0.635	0.666	0.177
D (μs)	3.813	3.813	3.813	2.000	3.920
Vert. frequency	70.09Hz	70.09Hz	59.94Hz	56.25Hz	86.96Hz
F (μs)	1.907	1.117	1.049	0.626	0.563
G (μs)	11.122	12.766	15.252	17.066	10.810
H (μs)	1.174	0.319	0.318	0.029	0.014
I (μs)	0.064	0.064	0.064	0.057	0.113

PICTURE	RESETING				OPTIONAL
Parameters	(NI)	(NI)	VESA	VESA	PC9800
Vertical lines	600	768	600	768	400
Hori. frequency	48.08KHz	48.36KHz	37.88KHz	56.48KHz	24.82KHz
A (μs)	1.280	2.523	2.200	1.920	3.8
B (μs)	16.000	15.754	20.000	13.653	30.4
C (μs)	1.120	0.338	1.000	0.321	3.04
D (μs)	2.400	2.062	3.200	1.813	3.04
Vert. frequency	71.97Hz	59.71Hz	60.03Hz	70.07Hz	56.4Hz
F (μs)	0.790	0.620	0.686	0.514	1.01
G (μs)	12.480	15.880	15.840	13.599	16.11
H (μs)	0.499	0.124	0.038	0.053	0.28
I (μs)	0.125	0.124	0.106	0.106	0.32

4.0 DISPLAY ALIGNMENT

4.1 DISPLAY SIZE

For all presetting mode listing in para.3.12 shall be within the limitation :

H.WIDTH	260 ± 4 mm
V.HEIGHT	195 ± 3 mm

Minimum external control range of display size for all interface timings listing in para 3.12 shall be within the limitation :

H.WIDTH	nominal +10% to -8%	(239 mm - 286mm)
	(PC9800 mode +5% to -8%)	(OPTIONAL)
V.HEIGHT	nominal 10%	(175.5mm - 214.5mm)

4.2 PICTURE POSITION

For all presetting mode listing in para 3.12 shall be within the limitation :

H.PHASE	SCREEN CENTER	±3 mm
V.CENTER	SCREEN CENTER	± 3 mm

Minimum external controls range of display position for all interface timings listing in para 3.12:

H.POSITION	40 mm
V.CENTER	20 mm

4.3 LINEARITY

The CONTRAST and BRIGHTNESS control shall be properly adjusted at 20 F-L with Full-intensity reverse pattern, then change to crosshatch Pattern 8 x 6 (H x V), the size of grid of crosshatch pattern in every display mode shall not vary than 5% , If twoline is next to each other, 6% if they are not next to each other .The calculation formula was listed below:

$$\frac{Hmax - Hmin}{Hmax + Hmin} \times 100\% \quad or \quad \frac{Vmax - Vmin}{Vmax + Vmin} \times 100\%$$

4.4 GEOMETRY DISTORTION

The CONTRAST and BRIGHTNESS control shall be properly adjusted at 20 F-L with full-intensity reverse pattern, then change to crosshatch pattern.

-(1) pincushion distortion shall be less than 2.0 mm .

-(2) barrel distortion shall be less than 1.5 mm.

-(3) trapezoid and parallelogram distortion shall be less than 3.0 mm.

-(4) s curve distortion shall be less than 0.5 mm.

-(5) tilt distortion shall be less than 1/2 degree when facing east and less than 1 degree when tuening around 360 degree

4.5 ALIGNMENT PROCEDURE

- Warm up the monitor for at least 30 mintus before adjustment.
- Set the front of CRT to the east.
- Turn all VR set to center position.

4.5.1 H.Freg., B+VOLTAGE, G1, H.Position ADJUSTMENT

1. Input Timing 1, use a 10uf / 16V capaster connect TP1 to GND. Adjust VR102 slowly until the display rolling slowest.
2. Use front control key adjust the display size about 260mm, adjust VR902 Let the voltage of D917 cathod is 124.5± 0.5V. (When L/R CRT is 127.5± 0.5V)(When Mat NOM CRT is 122V ± 0.5V)(WHEN use AS+CAN. CRT is 130V)
3. Measure the voltage of TP2, the voltage must be within 5.7 ± 0.2V, then apply external voltage 6.5V to TP2, the monitor should shut itself down.
4. Adjust VR603 so the back raster is placed at center position in relation to Bezel.

4.5.2 WHITE BALANCE ADJUSTNEBT

- EXT. BRIGHTNESS AND EXT. CONTRAST set MAX.

1. Input Timing 2 without pattern. adjust G2 VR (mounting on F.B.T) so that the brightness of back raster to become 1.3± 0.2FL.
2. Input timing 2 with pattern adjust VR602 let the brightness is 80± 20FL.
3. Input timing 3, adjust VR606 let the let the brightness is 28± 2FL.
4. Adjust EXT. BRIGHTNESS let the back raster just cut off. And adjust EXT. CONTRAST le the brightness of display is about 2FL.

5.Adjust VR VR702 and VR722, let the X-coordinate, Y-coordinate be in 0.281± 0.01 and 0.311± 0.01 range.

6. Move EXT. CONTRAST to MAX. adjust VR701, VR721, so that X-coordinate and Y-coordinate should inside specification.

4.5.3 V-FREQ. ADJUSMENT

1. Set EXT. BRIGHTNESS and EXT. CONTRAST TO 25FL.

2. Input timing 4, use front control key let vertical size to MAX. Adjust VR201 let vertical size to MAX. display range of CRT.

4.5.4 SIDE PINCUSHION, TILT AND GEMETORY DISTORTION ADJUSTMENT

1. Input timing 1, adjust the display be normal position and size.

2. Adjust front control KEY to get the best pincushior distortion and tilt.

3 .Selector P501 and adjust VR506, to get the best genetory distortion.

4.5.5 FOCUS ADJUSTMENT

1. Input timing 5, EXT. BRIGHTNESS move to center position. Use EXT.CONTRAST set the brightness to 25FL.

2. Adjust Focus VR (mounting on F.B.T), to get best focus.

4.5.6 PRESET TIMING ADJUSTMENT

1. Input each PRESET MODE timing, and use front control key adjust the display to the normal position and size, and wait for 5 seconds.

2. Switch to next timing repeat 1 process. Unitl every PRESET MODE timing have been adjusted.

4.5.7 TIMING AND PATTERN

	TIMING MODE	PATTERN.MDNM/
1	VESA 56.48K	CROSS HATCH
2	VESA 56.48K	2" SEQUIRE
3	VESA 56.48K	FULL WHITE
4	VESA 350 LINE	CROSS HATCH
5.	VESA 56.48K	"H" CHARACTER

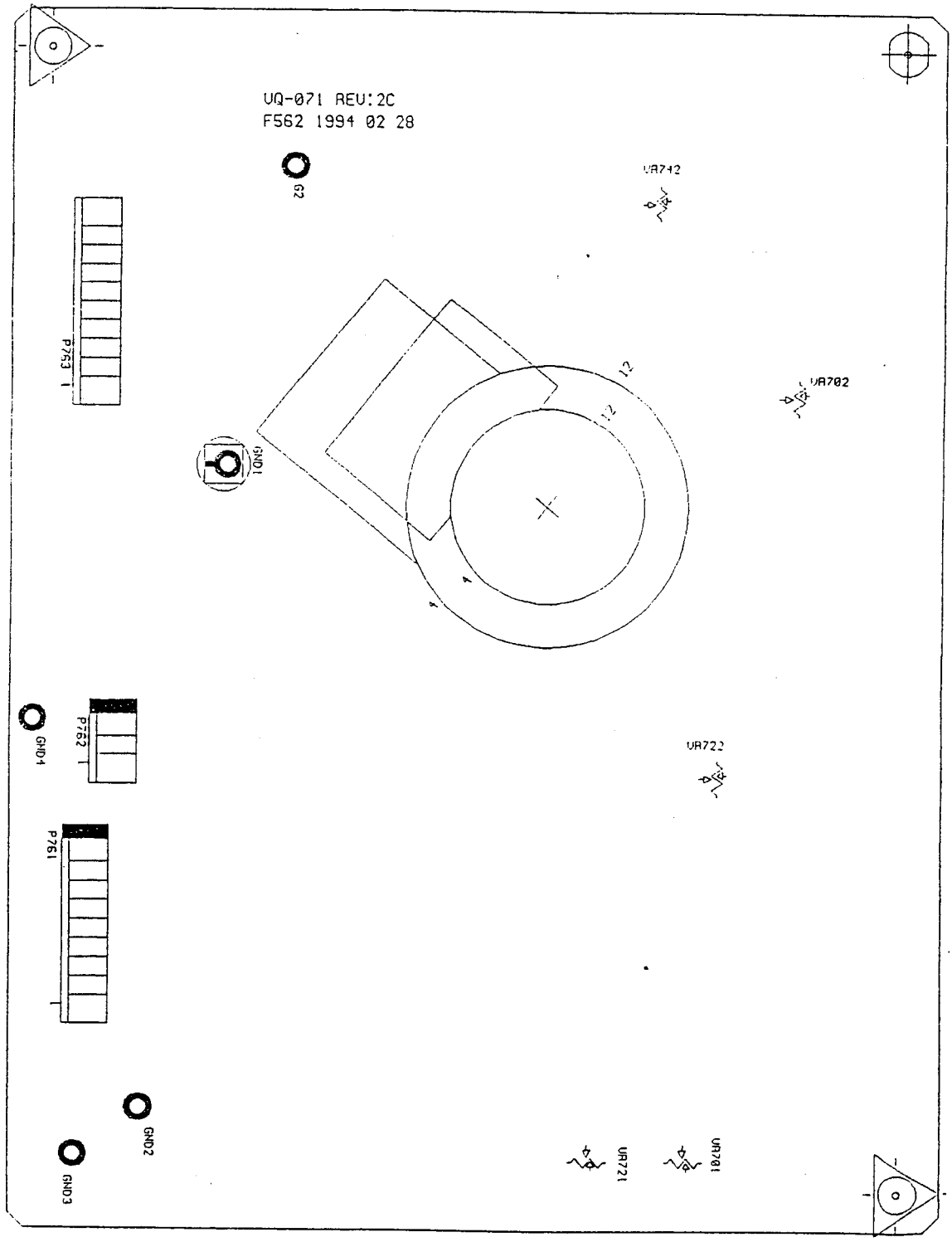
5.0 REGULATION COMPLIANCE

This monitor comply to the most current revisions of following regulations:

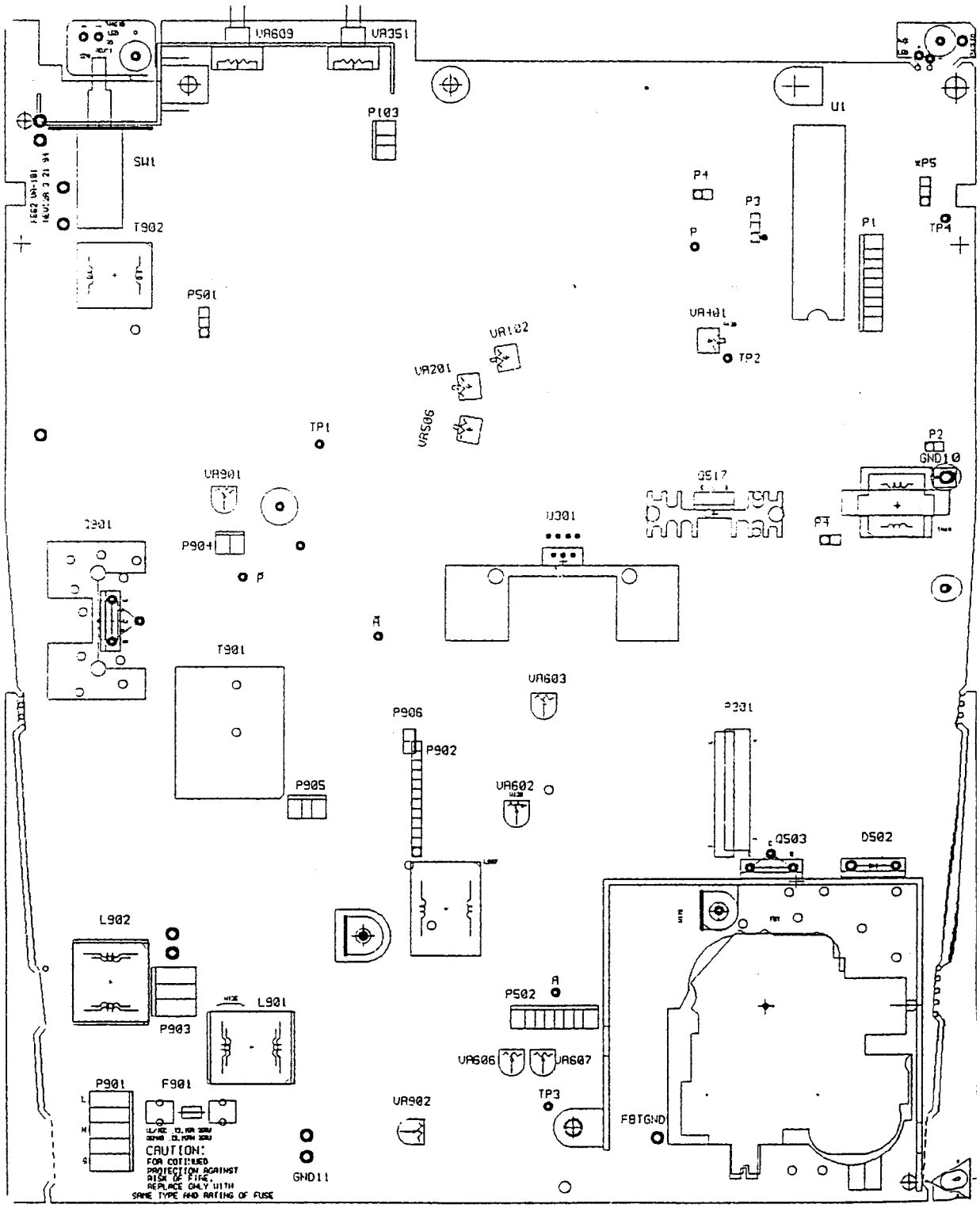
UL 1950	Standard for safety of information technology equipment including electrical business equipment.
CSA C22.2	Safety of information technology equipment No. 950 including electrical business equipment.
EN 60 950	Safety of information technology equipment including electrical business equipment.
ZH 1/618	Safety regulation for display work places in the office sector
ISO 9241-3	Ergonomic requirements for office work with visual disayer minals(VDTz)-part3:visual display requirements.
21 CFR 1002.10 and 1002.12	Guide for compliance with television receiverreporting and testing program requirements.
47 FFR,CHAPTER	A digital device that is markwt for use in a 1,Subcapter residential eniron ment not withstanding use in A,part 15,commercial, buseness and industical environments Subpart B
VDE 0871	Radio interference suppression of radio frequency equipment for in dustrial,scientific and medical (ISM) and similar purposes.
VDE 0877	Measurement for radio interference.
CISPR 22	Limits and methods of measurement of radio interference characteristics of information technology equipment.
EN 55 022	Specification for limits and methods of measurement of radio interference characteristics of information technology equipment.
MPR 1990:8	Test methods for visual display units.
MPR 1990:10	User's handbook for evaluating visual display units.

6.0 CONTROLS AND CONNECTORS LAYOUT

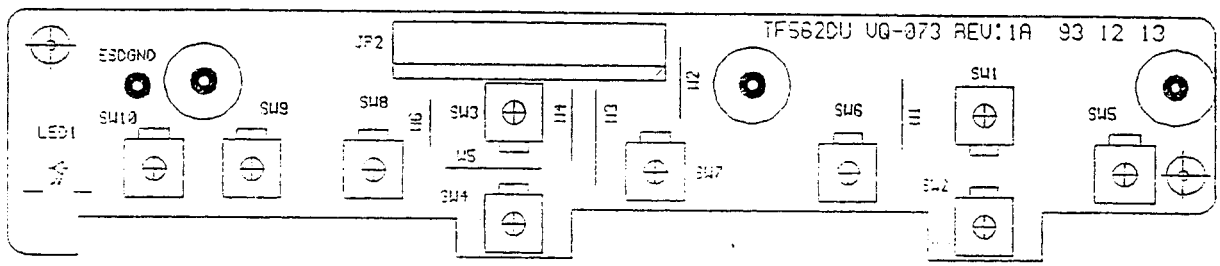
6.1 VIDEO PCB



6.2 MAIN PCB


VA609
VA351
P103
U1
SW1
P4
P3
P
P1
xP5
TP4
T902
PS01
VA101
VA102
VA201
VA506
TP2
TP1
P2
GND10
VA901
Q517
P904
U301
T901
VA603
P906
P902
P331
P905
VA602
Q503
D502
L902
P903
L901
PS02
VA606
VA607
P901
F901
TP3
VA902
FBTGND
GND11
CAUTION:
FOR CONTINUED
PROTECTION AGAINST
RISK OF FIRE,
REPLACE ONLY WITH
SAME TYPE AND RATING OF FUSE

6.3 EXTERNAL PCB



6.4 PIN ASSIGNMENT

6.4.1

LOC. / P1N	P763	P761 ⇓ I/O CABLE	P762 =P103	P1	P301 ⇓ DY	P3	P902	
1	MUTE	G-I/O	GND	JP1.3,P4.3	H-I	TOF	GND	
2	CLAMP	G-GND	V-I/O	JP1.4,P4.4	H-O	SOS	GND	
3	GI	R-I/O	H-I/O	JP1.5,P4.5	V-I	TILT-I	GND	
4	CONTRAST	R-GND		JP1.6,P4.6	V-O		70V	
5	16V	B-I/O		JP1.7,P4.7			16V	
6	70V	B-GND		JP1.8,P4.8			70VIN	
7	BLANK	H-I/O		JP1.9,P4.9			GND	
8	GND	V-I/O		JP1.1,P4.1			26VIN	
9	GND	GND		JP1.2,P4.2			26VIN	
10	HEATER						26V	
11							16VIN	
12							6.3VIN	

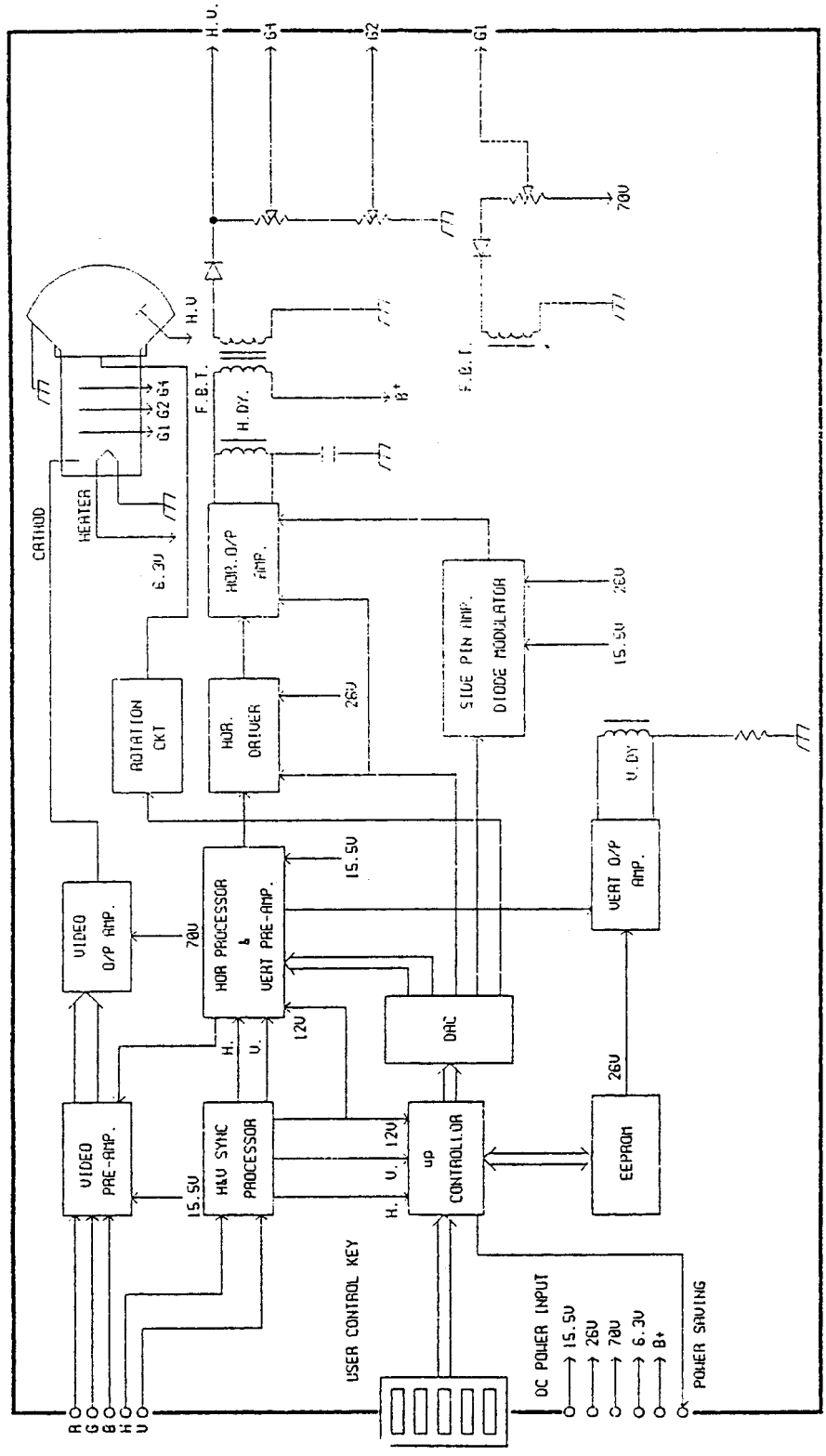
6.4.2.1 P763 1~8=P502 1~8, P763-9=P906-1, P763-10=P906-2

6.4.2.2 P906-1=GND.P906-2=HEATER VOLTAGE

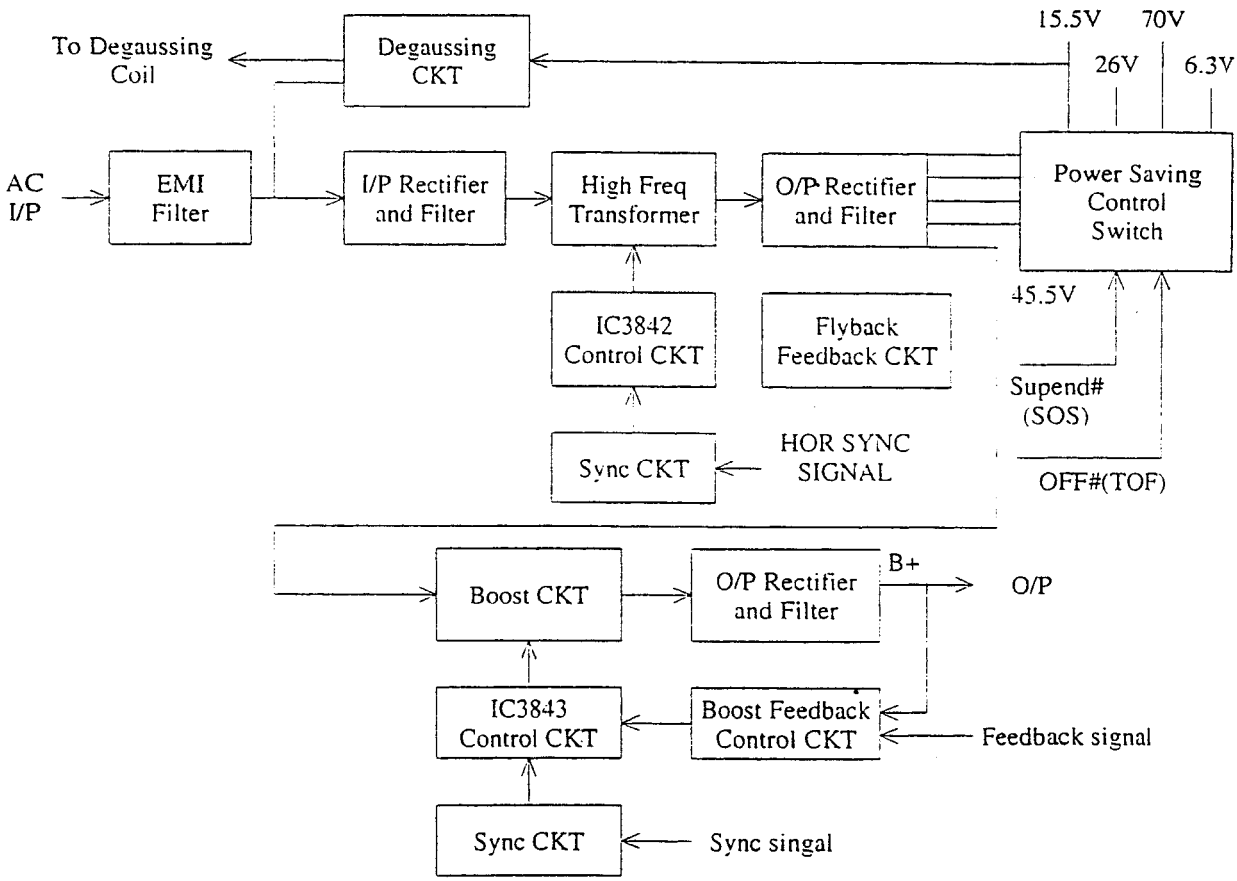
6.4.2.3 JP10,11=P905 1, 3

6.4.2.4 P501 PHASE ROTATION SELECT CONN.

7.0 FUNCTION BLOCK DIAGRAM



562DU POWER SUPPLY FUNCTION BLOCK DIAGRAM



8.0 OPERATION THEOREM

8.1 H & V sync. processor

The key component of this block is U101 74LS86, it's function is separate horizontal sync, and vertica sync. To get the polarity fixed.

8.2 Vertical deflection

The vertical deflection circuit including synchronizer, vertical oscillator, vertocal driver, vertical output amplifier.

8.2.1 Vertical synchronizer

The vertical sync. signal comes from U101 then enter at pin14 of U401 (TDA9102C), to synchronize the vertical oscillator.

8.2.2 Vertical oscillator and driver circuit

The vertical oscillator is at pin12, 18 of U401 and the peripheral componment, the frequence is controled by the voltage of V/F, that comes from digital controllor. the vertical linearity can be adjusted by change the DC voltage of pin17 of U401.
U401 TDA9102C also build-in a vertical driver. a saw-tooth signal output from P15.

8.2.3 Vertical output amplifier and vertical centering circuit

U301 TDA8172 is the output amplifier, drive a saw-tooth current to vertical DEFLECTION YOKE. Q301, Q302 is a push-pull ampilifier, supply a DC current to the vertical D.Y., to move display up or down.

8.3 Horizontal deflection circuit

The horizontal deflection circuit is made up of HOR. synchronizer. HOR. oscillator, HOR. DRIVER, HOR. OUTPUT and HIGHT VOLTAGE DENERATOR.

8.3.1 Horizontal synchronizer and oscillator

The horizontal sync. signal input to pin4 of U401 TDA9102C, to synchronize the horizontal oscillator, the frequance of oscillator is proportionate to the voltage of "H/F", it is conrolled by digital controllor.

"H/C" is a HOR. PHASE control voltage, that output from digital conrollor.

8.3.2 Horizontal driver and output circuit

The driver waveform come out at pin7 of U401, through the H.V. protection circuit (Q401, Q402, Q403) to the driver transistor (Q404), the driver transformer (T401) supply the drive current, turn on and turn off the HOR. output trasistor (Q503) alternately, a saw-tooth corrent hen be gentrated in the horizontal deflection coil.
Q603, Q604 is a push-pull AMP, it supply a positive or negative current to move the raster to left or right side.

8.3.3 High voltage generator

(1) Anode voltage

The high voltage applied to CRT anode is obtained by boosting and rectifying the puise voltage generated during the horizontal fly-back period with fly-back transformer (F.B.T.)

(2)Focus voltage

The focus voltage is ortained by dividing the anode voltage with focus VR.

(3) Screen voltage

The screen voltage is obtained by dividing the anode voltage with screen VR.

8.4 X-RAY protection circuit

The circuit prevents the X-RAY radiation from exceeding the allowable value when the Anode voltage of CRT rises abnormally. The voltage to be detected is obtained by rectifying the pulse from FBT pin10, when the voltage that divide by R409, R420, is over 6.2VDC, the transistor Q402 will turn on, then the horizontal driver signal will be disable, the horizontal deflection circuit and hight voltage generator immediate shout off.
X-RAY protection circuit will be reset when turn the power off, then turn on again.

8.5 Geometric distortion correction circuit

The geometric distortion correction circuit including:

8.5.1 Side pincushion compensation circuit

The saw-tooth waveform comes from P15 of U401, coupling to the base of Q510. The base voltage of Q509 control the gain of saw-tooth waveform, this waveform output from the emitter of Q507 and coupling to the base of Q515.
Q515 is a parabola generator, the parabola waveform connected to the diode modulator amplifier (Q516, Q517), the side pincushion distortion will be compensated.

8.5.2 Parallelogam correction: (P501)

A parabola waveform connect to the horizontal phase circuit, the paralleloram will be changed.

8.6 Video amplifier circuit

The video signal input VIA the coaxial cable, and AC couple to the video PRE. AMPLIFIER U701 LM1203N. The U701 with gain control for white balance adjustment. The signal output from pin16, pin20, pin25, connect to the video output amplifier, the video signal will be amplify about 50 times (contrast MAX.) and coupling to the cathod of CRT, to light up the screen VR702, VR722, VR742 adjust the bias of video output signal for dark balance adjustment.

8.7 Digital controllor

The digital controllor including micro processor U1 80C51, eeprom U3 M93C56, D-A convertor U2 M62359P and peripheral componment, this controllor control horizontal free-runing frequence (FH), horizontal phase (HC), horizontal width (HS), vertical frequence (FV), vertical size (VS), vertical position (VC) and side pincushion (DC). The digital signal convert to analog voltage by U2 D-A convertor to control deflection circuit.
The micro processor generate a "MUTE" signal while the input timing changed. To "MUTE" the display, avoid unstable display on the screen and SEND two signals to power control for power saveing function.

MICR-PROCESSOR also generated FIVE sw signal:

SW1	H.SYNC frequende highter than	36.5KHz	"Hi"
SW2	H.SYNC frequence highter than	46KHz	"Hi"
SW3	H.SYNC frequence highter than	58KHz	"Hi"
SW4	H.SYNC frequence highter than	52KHz	"Hi"
SW5	H.SYNC frequence highter than	28KHz	"Hi"

There are 31 data space, inside the eeprom for the datd storage. There are 13 preset mode and 17 user's mode can be memoryed.

8.8 POWER SUPPLY

8.8.1 DEGUSSING CKT:

Under power on and P904 shorted (manual degaussing) conditions, Q904 will turn on for a period of time decided by C916 and R914, during that time period the degausing current will flow throngh the degaussing coil.

8.8.2 FLYBACK MODE POWER CONVERTION CKT:

The flyback power convertion CKT consists of a high frequency transformer (T901), output rectifiers and filters, feedback CKT (U903,U902) and IC3842 control CKT (U901).

a.When Q901 turns on, the energy stores in T901, and after Q901 turns off, the energy stored in T901 will feed to secondary windings and supply to all outputs.

b.The output diodes rectify the AC voltages to DC ones and then filtered by the output capacitors to generate DC voltages. The second LC stages attenuate the high frequency noises to get reasonable output ripples.

c.U903 sends the feedback error signal which comes from 16V output to U902 and then transfer to U901, Combining with the current feeback signal which comes from R924 the two signals make U901 to generate an appropriate PWM pulse to drive Q901.

8.8.3 POWER SAVING CONTROL SWITCH

Q912 is an ON/OFF switch of 26V, when received a suspend singnal wich comes from μ–p, Q912 will turn off making the monitor to go to suspend mode.

Q914 and Q917 are individually the ON/OFF switchs of +16V and +6.3V when these two switchs are turned off by the off-mode signal comming from μ-P the monitor goes to turn-off mode (of course, the +26V is also turned off).

8.8.4 BOOST MODE POWER CONVERTION CKT (THE B+ GENERATOR)

It consists of boost power stage, output rectifier and filter, boost feedback control CKT and IC 3843 control CKT.

a.Q906 acting as a power transistor controls the energy flow through L907 and D917 combing with the output cnpacitor C929 to generate a voltage higher than the input to supply the B+ voltage to monitor.

b.There is a close loop to control the B+ voltage so as to regulate HV of the CRT. The feedback signal comes from one winding of the FBT transformer of monitor.

c:There is also a protection CKT (Q907,Q908) to self-regulate the B+ voltage when there is no feedback signal.

8.8.5 SYNCHRONIZING CKT:

There are two sync signals one comes from horizontal driver pulse to sync U901.The other comes from FBT winding to sync U904.

8.8.6 PROTECTION CKT:

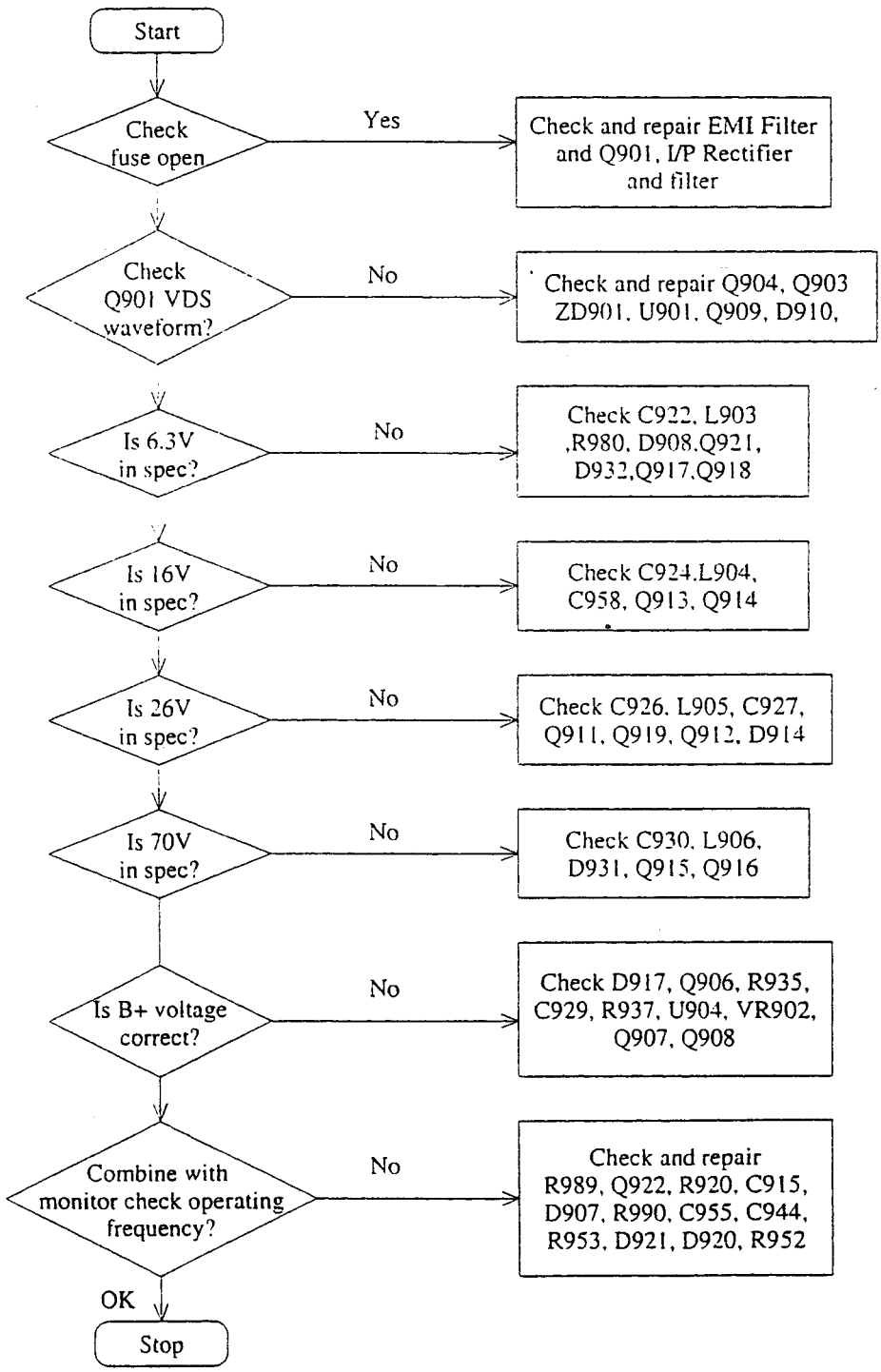
Under short CKT condition for each output, Q903 will remove the Vcc of IC 3842 and is continued to protect by its latching operation.

8.8.7 TILT CONTROL CKT:

It receives the tilt (analogue) signal which comes from DAC of monitor and then amplifies the signal to drive the tilt coil (Q923,Q924).

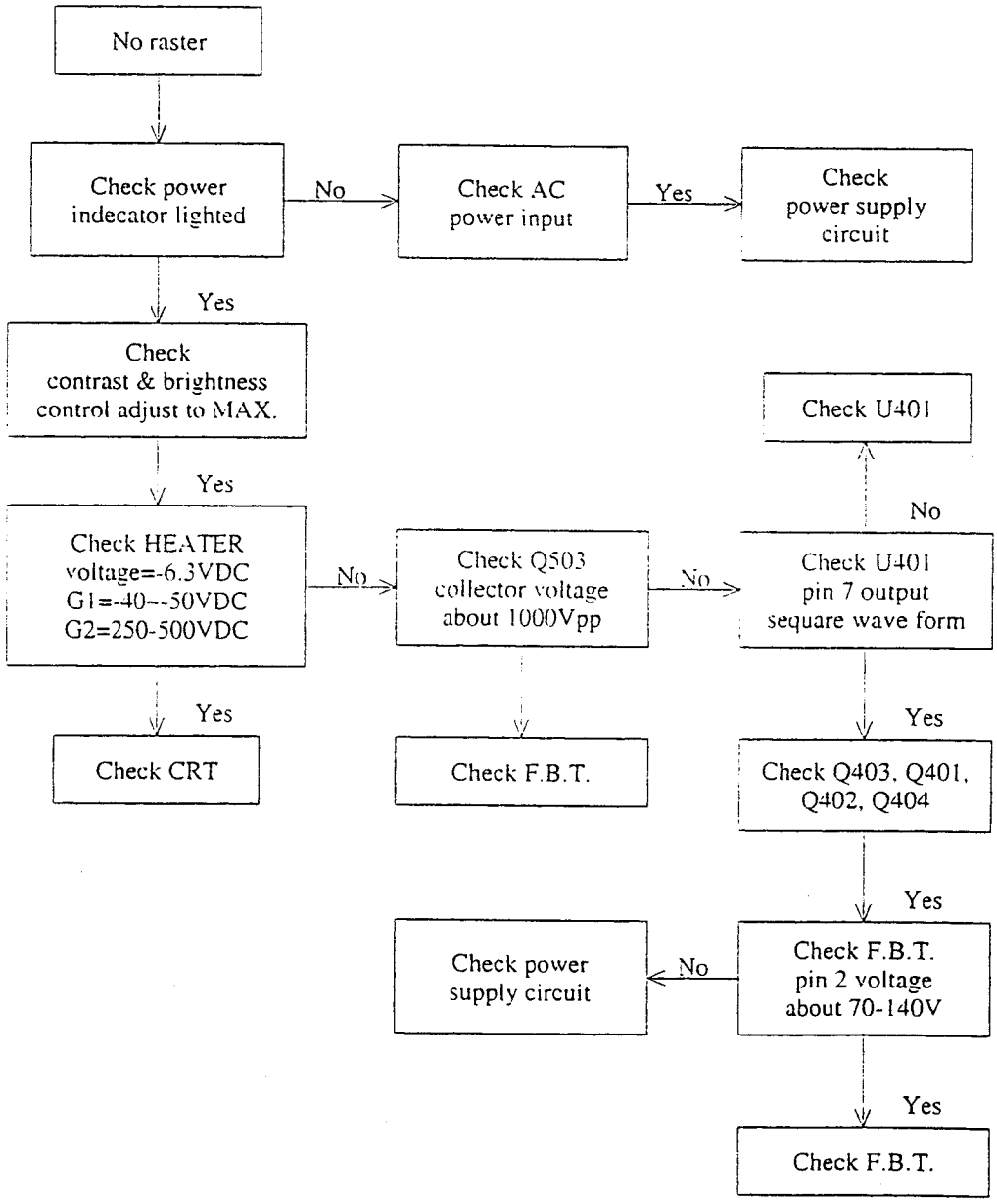
9.0 TROUBLE SHOOTING

9.1 POWER SUPPLY CHECK

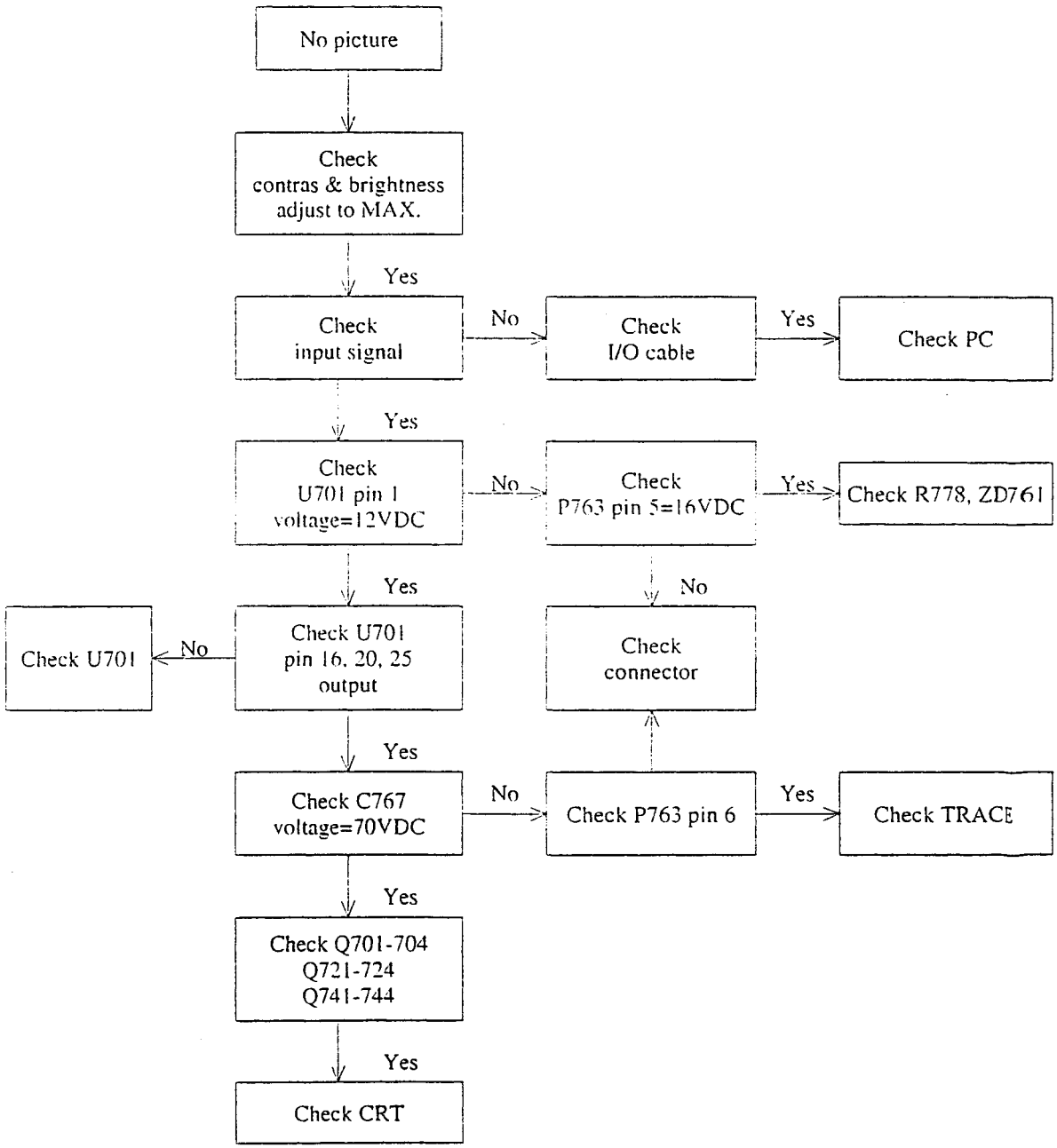

Start
Check fuse open
Yes
Check and repair EMI Filter and Q901, I/P Rectifier and filter
Check Q901 VDS waveform?
No
Check and repair Q904, Q903 ZD901, U901, Q909, D910,
Is 6.3V in spec?
No
Check C922, L903 ,R980, D908,Q921, D932,Q917,Q918
Is 16V in spec?
No
Check C924,L904, C958, Q913, Q914
Is 26V in spec?
No
Check C926, L905, C927, Q911, Q919, Q912, D914
Is 70V in spec?
No
Check C930, L906, D931, Q915, Q916
Is B+ voltage correct?
No
Check D917, Q906, R935, C929, R937, U904, VR902, Q907, Q908
Combine with monitor check operating frequency?
No
Check and repair R989, Q922, R920, C915, D907, R990, C955, C944, R953, D921, D920, R952
OK
Stop

9.2 MONITOR CHECK FLOW CHART

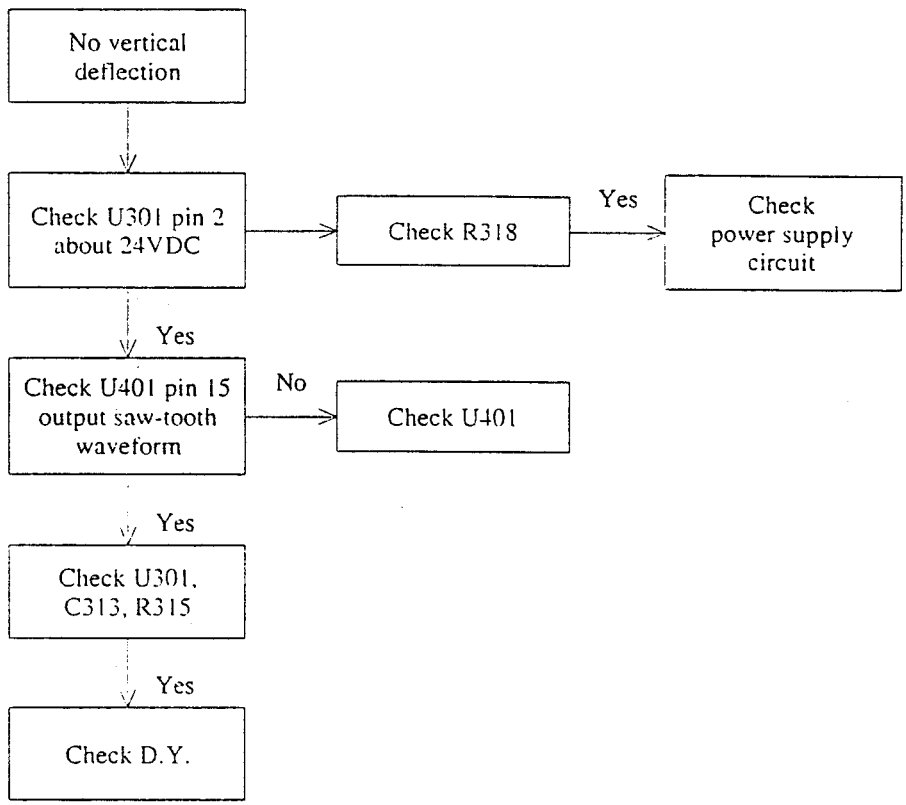
9.2.1 NO RASTER

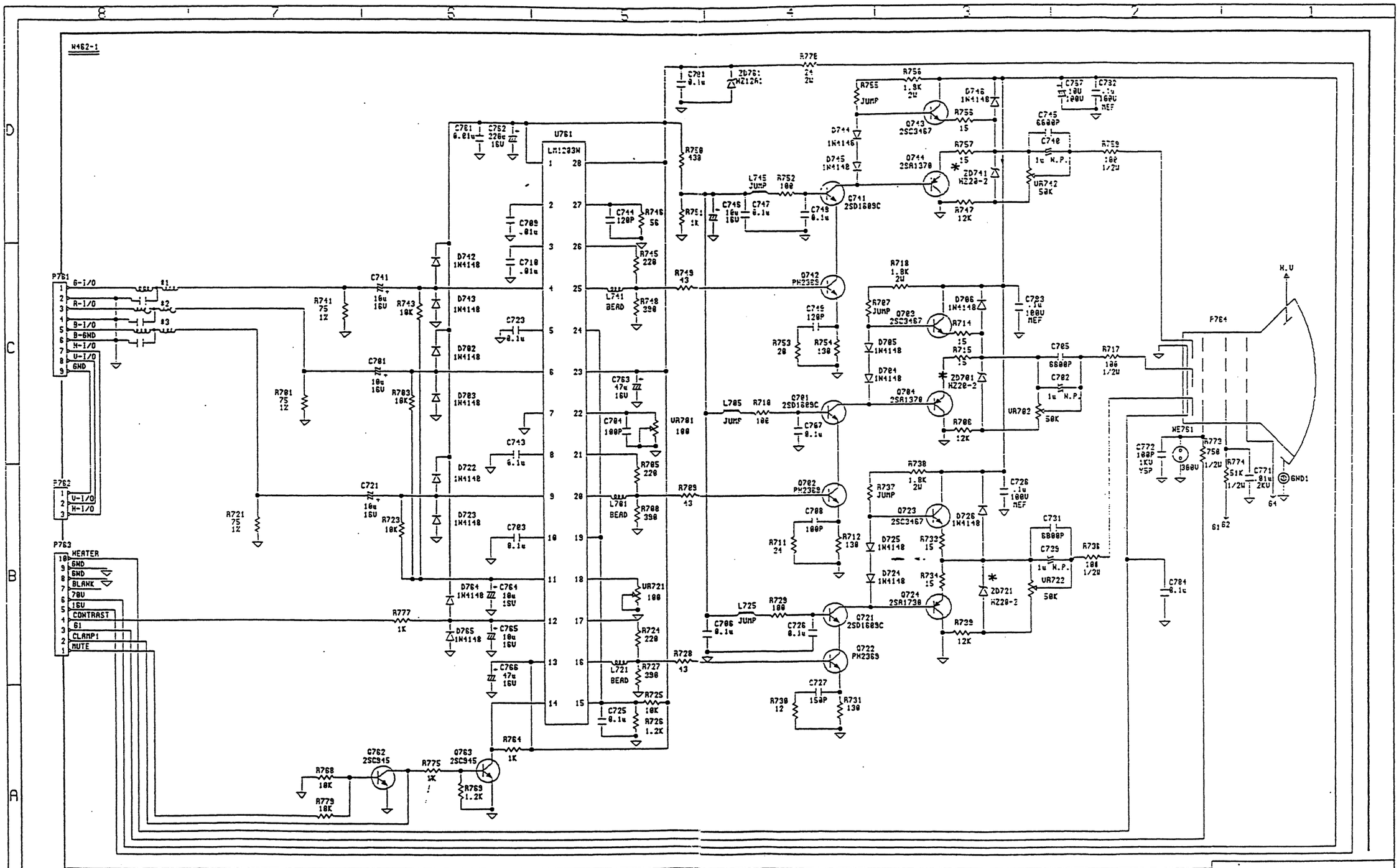


9.2.2 NO PICTURE



9.2.3 NO VERTICAL DEFLECTION (RESTER BECOME A HORIZONTAL LINE)

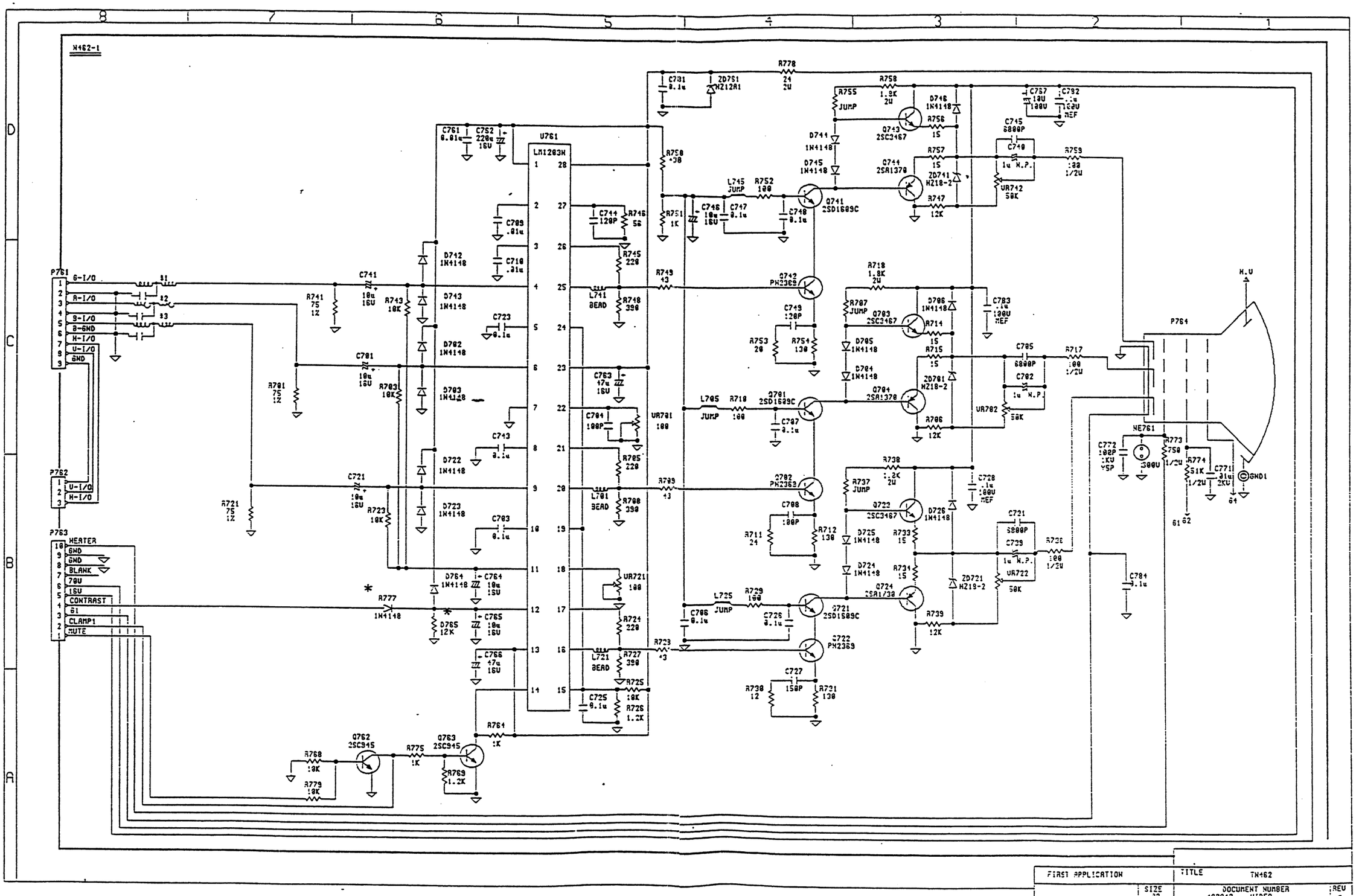




FIRST APPLICATION		TITLE TH462	
	SIZE A3	DOCUMENT NUMBER 452042 VIDEO	REV 1F
MODEL NO. TH462	Date: 1993-08-24	Sheet 2 of 3	
APPROVED	CHECKED	DRAWN	

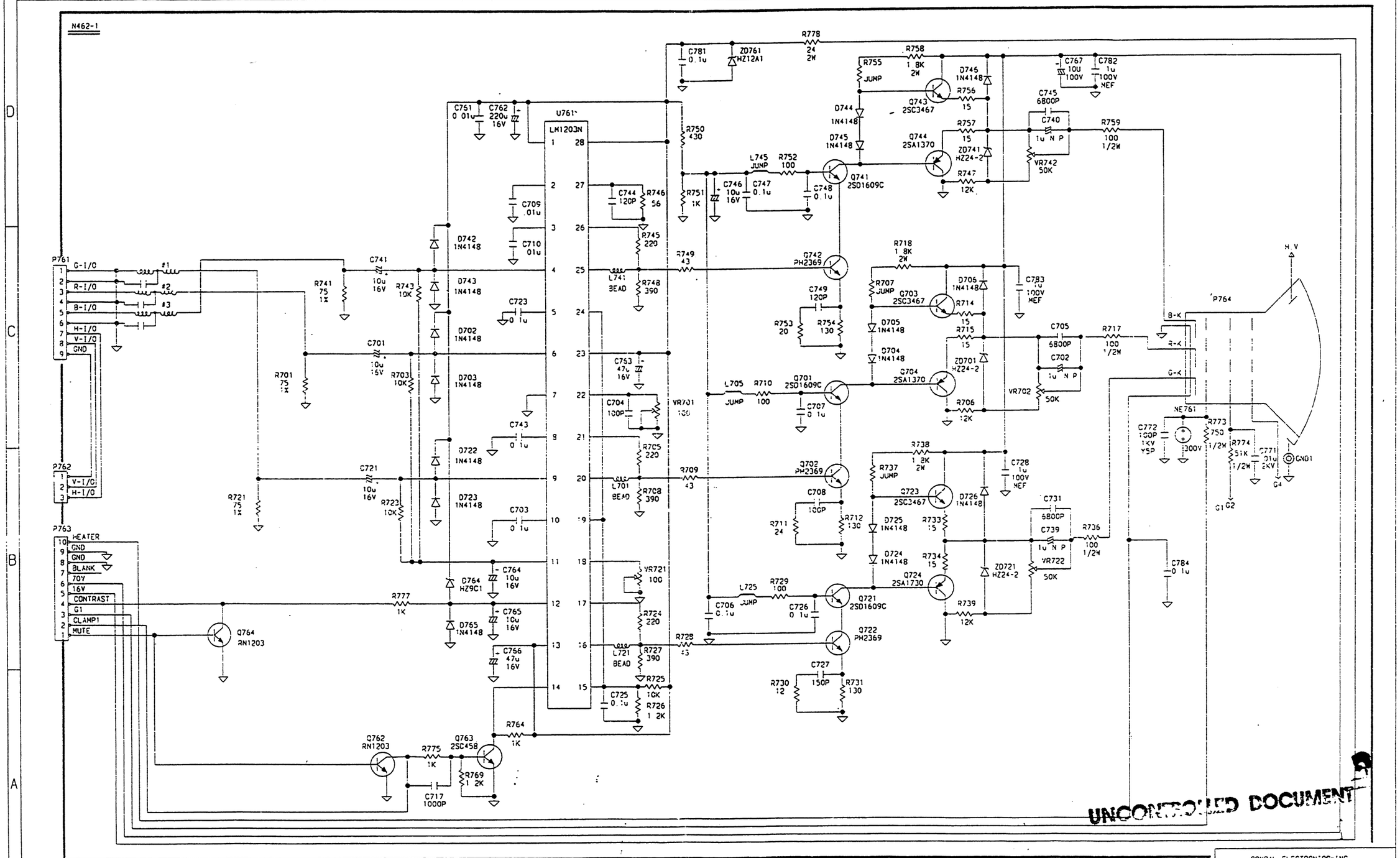
FOR 452042-01, -02, -03, -05, -11, -21

N462-1



FOR. 452042-04

FIRST APPLICATION		TITLE TN462	
	SIZE A3	DOCUMENT NUMBER 452042 VIDEO	REV F
MODEL NO. TN462	Date: 1993-08-24	Sheet 3 of 3	
APPROVED	CHECKED	DRAWN	



FOR 452042-04

COMPAL ELECTRONICS,INC			
FIRST APPLICATION	TITLE TN462		
	SIZE A3	DOCUMENT NUMBER 402042 VIDEO	REV 5A
MODEL NO TN462	Date 1995-06-28	Sheet 3 of 6	
APPROVED	CHECKED	DRAWN	

F562-1

P103 H.SYNC V.SYNC R101 10K 1/8W R131 230 ZD102 HZ5C2 ZD101 HZ5C2 C103 470u 10V C104 .01u R102 220 1/8W R201 10K 1/8W ZD201 HZ5C2 R202 1K 1/8W

P4-3 FOR -02 P103

U101 74LS86 R103 330 1/8W C101 1u U101 74LS86 R203 1K 1/8W C201 10u 16V U101 74LS86 HD VD

<P2. P3> 12V

H.C <P4> U2-14 R106 35K 1/8W R105 30K 1/8W C105 .1u U201 LM358 R107 3.5K 1/4W C117 .1u

V.S <P4> U2-13 R205 30K 1/8W U102 LM358 R213 15K 1/8W D202 1N4148 C202 .47u R204 15K 1/8W

C203 .01u C102 47u 15V R114 12K 1/8W R115 1K C120 100P Q101 2SC945 R116 12K 1/8W

U401-15 <P3> F502-2 <P5>

H.F <P3> U2-6 R110 10K 1/4W R109 2.4K 1/8W C107 .01u MEF D201 1N4148 U102 LM358 Q102 2SC945 R111 1.5K 1/8W * VR102 500 H.FREQ R215 150 1/8W R214 2.7K 1/8W

<P2. F3> 12V <P2. P3> 15V R129 1K

<P2> M

MUTE <P3.P4> U1-32 R128 10K 1/8W R139 10K 1/8W Q106 2SC945

C415 1u ZD401 HZ6C1 R407 1K 1/8W Q401 2SA733 Q402 2SC945 C417 1u R408 1K 1/8W R405 330 1W D402 1N4148 Q403 2SC2904 R405 1K 1/8W R404 470 C410 .33u MEF D403 1N4148 C415 47U 16V

TP2 U402 7812 L401 55uH C412 100u 15V C413 47u 25V C414 100u 25V

HP <P2> HD <P2> 12V <P2. P3> 15V <P2. P3> 30V <P2> AFC <P2>

R409 4.7K 1/8W VR401 5K C407 100u 35V R410 10K 1/8W D404 100F2 R403 27K 1/8W HV PROTECT

R302 51K 1/8W VR301 50K V.LIN R303 22K 1/8W C303 .015u MEF C304 .015u MEF C406 .015u MEF C411 .1u C419 100P

TP1 R415 1K 1/8W

U401 TDA9102C

R401 56K 1/2W R402 3.3K 1/8W C402 .0022u MEF C401 1u R301 200K 1/8W C301 1u C302 .27u MEF C403 250V PPN C404 56P C405 .22u MEF

V2 <P2>

R304 C308 100u 16V R305 22K 1/8W C309 .1u MEF R306 10K 1/8W R305 4.7K 1/8W R309 5.5K 1/8W

U301 TDA2172 R311 1.8 1/8W C310 .22u MEF

D301 RGP10B C306 .1u C305 1000u 35V C307 220u 35V R318 10 2W V.DY <P2> F301

R312 240 1/2W

R310 47 1/2W R314 3.9K 1/5W C311 47u 25V KPRI 2.4K

C313 2200u 25V R313 68 2W Q301 2SD669A-C Q302 2SB649A-C C314 100u 35V R316 4.7K D302 1N4148 R315 1.2R 1W R319 39K 1/6W

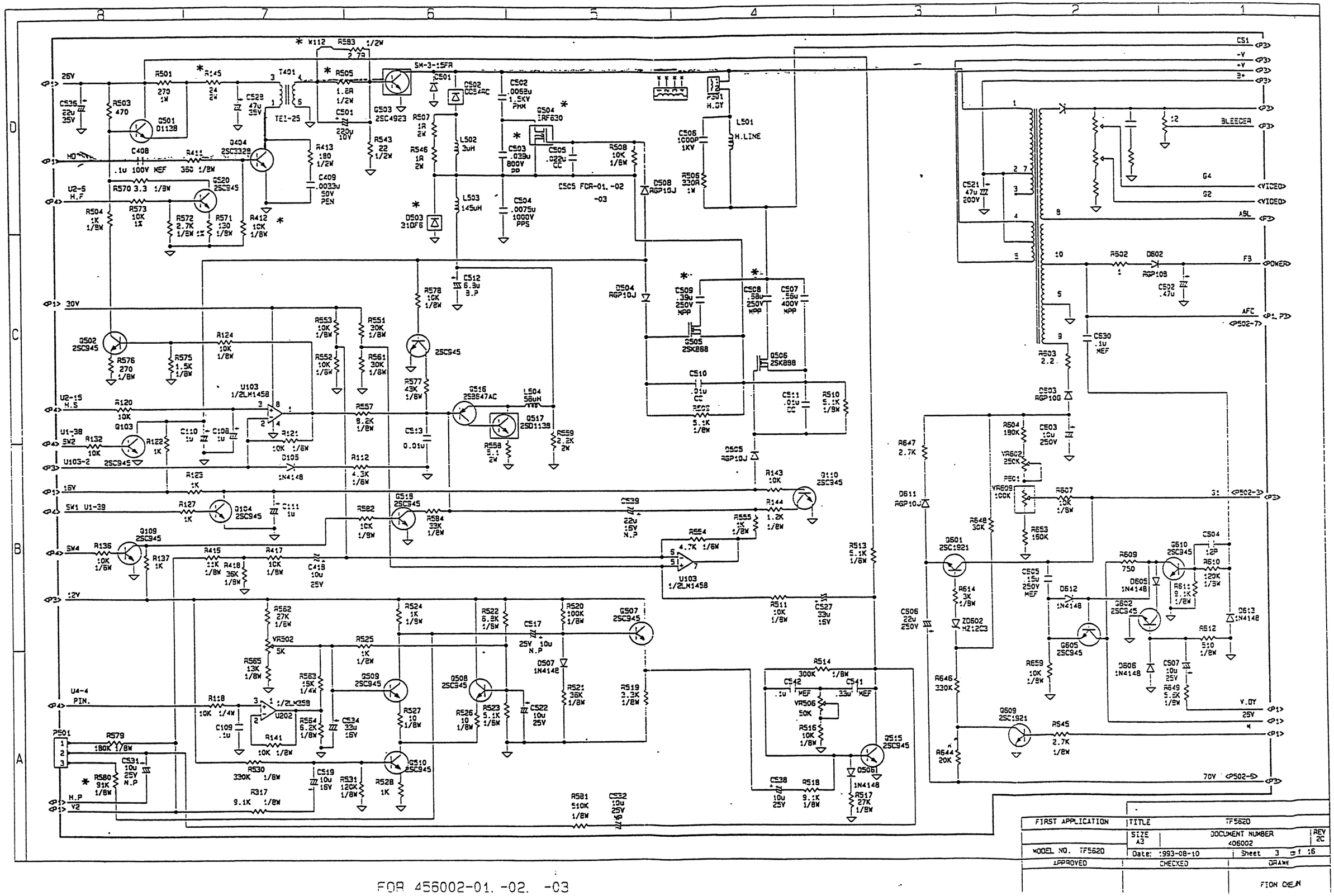
C205 .01u U202 LM358 Q202 2SC945 R211 10K 1/8W R210 580 1/8W C206 .47u R212 190 1/8W

U201 LM358 Q201 2SC945 R208 10K 1/4W R207 3K 1/8W C204 .01u R209 15K 1/8W INT.V.FREQ VR201 10K

U2-12 V.C <P4> V.F U2-7 <P4>

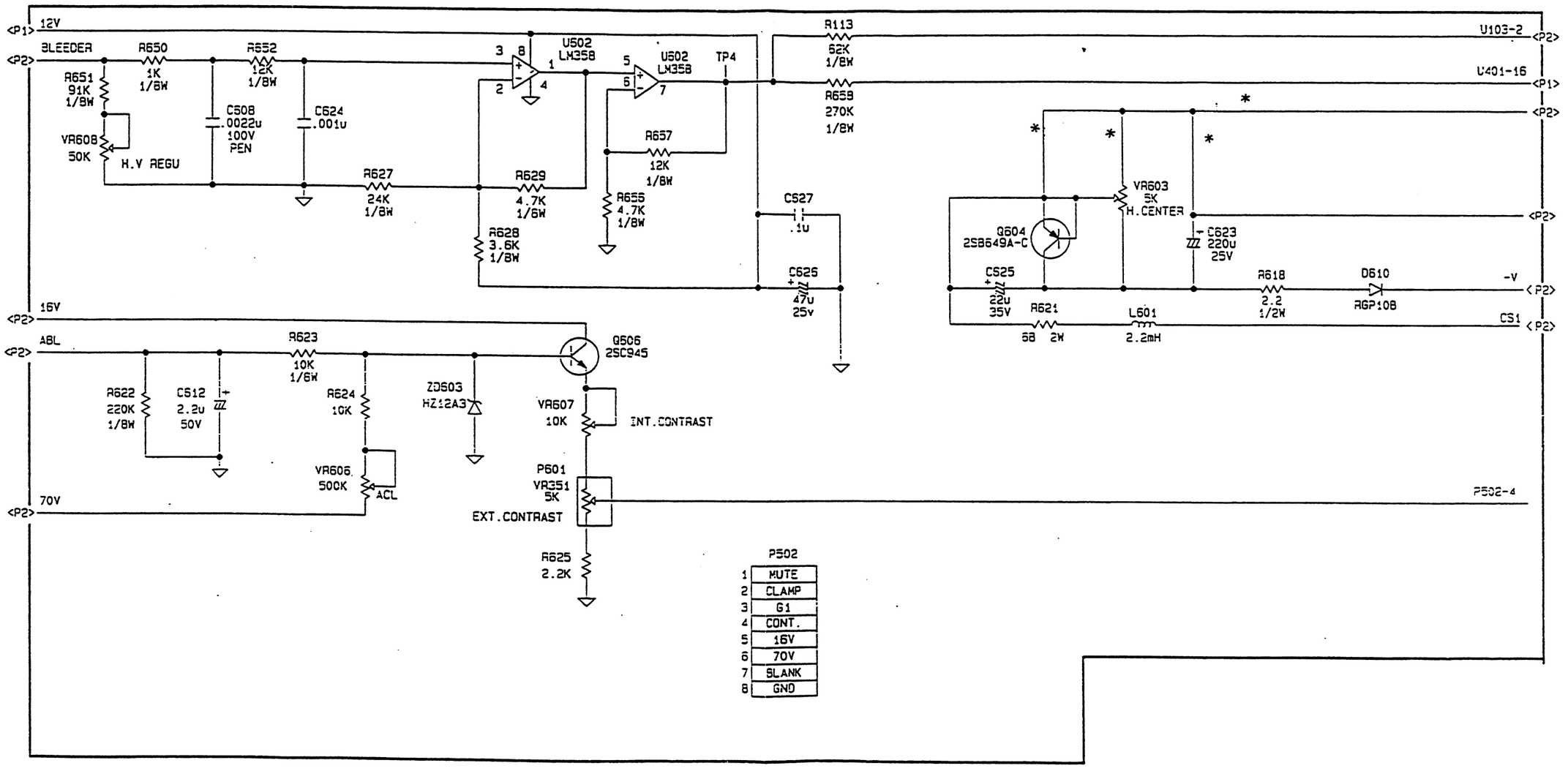
FIRST APPLICATION	Title TF552D	
	SIZE	DOCUMENT NUMBER 405002 REV 2C
MODEL NO. TF562D	Date: 1993-05-10	Sheet 2 of 16
APPROVED	CHECKED	DRAWN

FOR 455002-01, -02, -03 ——— Horizontal signal



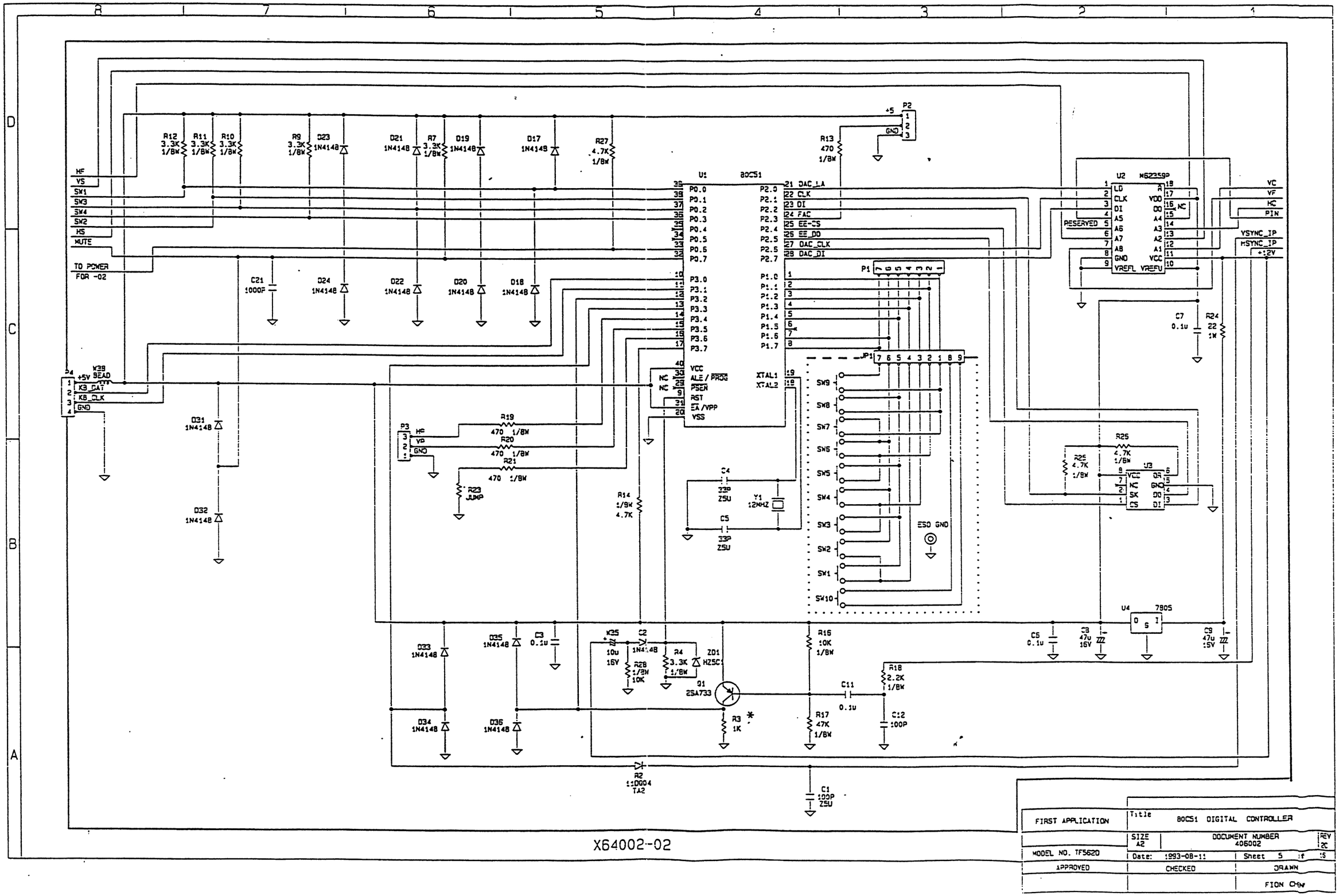
FOR 456002-01, -02, -03

F552-3



FOR 456002-01, -02, -03

FIRST APPLICATION	Title TF562D		
	SIZE A3	DOCUMENT NUMBER 406002	REV 2C
MODEL NO. TF562D	Date: 1993-08-11	Sheet 4 of 16	


U1 80C51
U2 M62359P
U3
U4 7805
P1
P2
P3
JP1
HF
VS
SW1
SW3
SW4
SW2
HS
MUTE
TO POWER FOR -02
R12 3.3K 1/8W
R11 3.3K 1/8W
R10 3.3K 1/8W
R9 3.3K 1/8W
R7 3.3K 1/8W
R27 4.7K 1/8W
R13 470 1/8W
R19 470 1/8W
R20 470 1/8W
R21 470 1/8W
R23 JUMP
R14 1/8W 4.7K
R25 4.7K 1/8W
R25 4.7K 1/8W
R24 22 1W
R16 10K 1/8W
R18 2.2K 1/8W
R17 47K 1/8W
R3 1K
R28 1/8W 10K
R4 3.3K 1/8W
C21 1000P
C7 0.1u
C4 33P Z5U
C5 33P Z5U
C11 0.1u
C12 100P
C3 0.1u
C5 0.1u
C8 47u 16V
C9 47u 16V
K25 10u 16V
C2 1N4148
C1 100P Z5U
R2 1D004 TA2
ZD1 HZ5C
Q1 2SA733
Y1 12MHZ
D18 1N4148
D20 1N4148
D22 1N4148
D24 1N4148
D17 1N4148
D19 1N4148
D21 1N4148
D23 1N4148
D31 1N4148
D32 1N4148
D33 1N4148
D34 1N4148
D35 1N4148
D36 1N4148
W39 HEAD
+5V
KB_DAT
KB_CLK
GND
ESD GND
SW9
SW8
SW7
SW6
SW5
SW4
SW3
SW2
SW1
SW10
VC
VF
HC
PIN
YSYNC_IP
HSYNC_IP
+12V
RESERVED
X64002-02
FIRST APPLICATION
Title 80C51 DIGITAL CONTROLLER
SIZE A2
DOCUMENT NUMBER 406002
REV 2C
MODEL NO. TF5620
Date: 1993-08-11
Sheet 5 of 15
APPROVED
CHECKED
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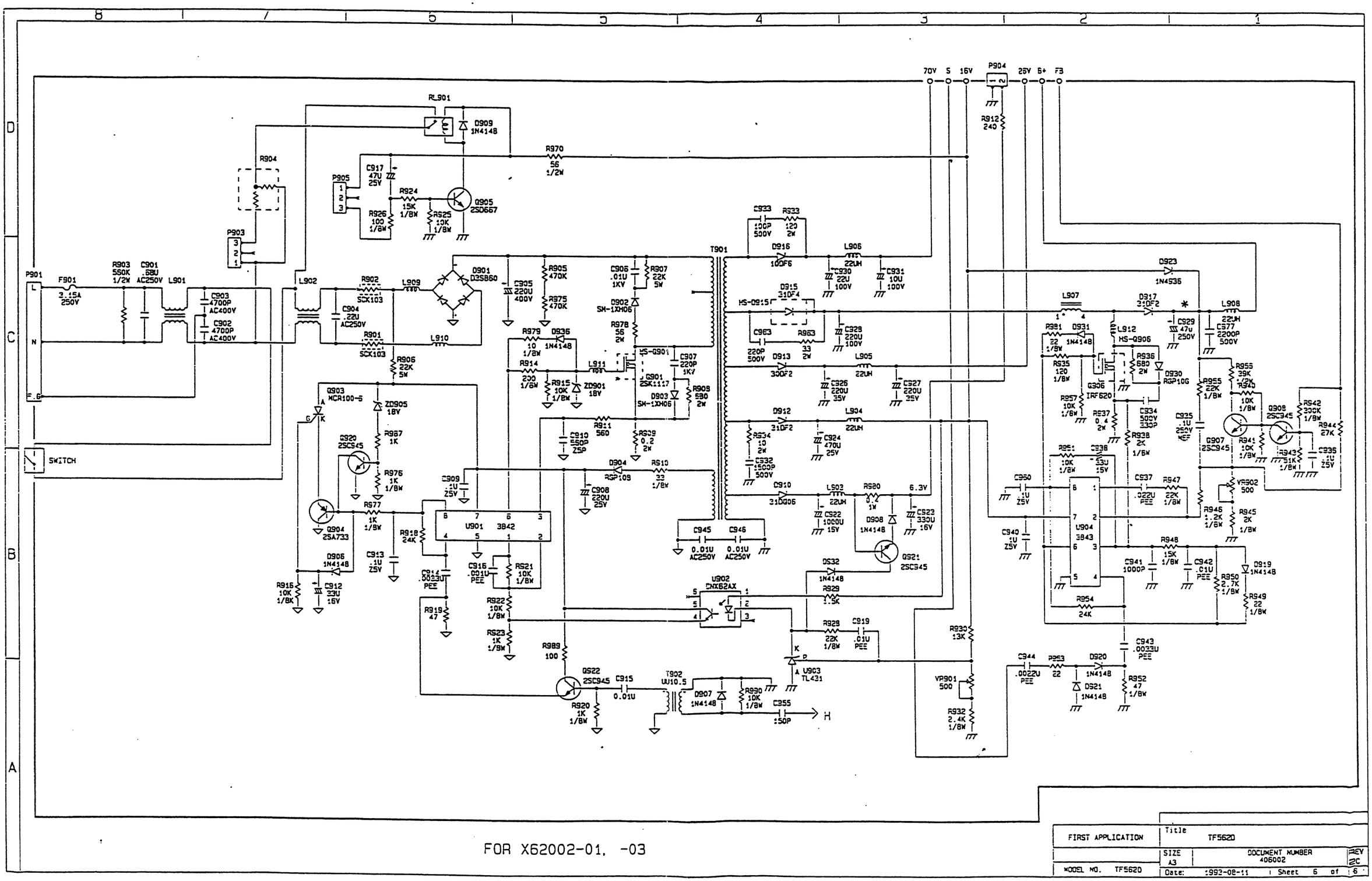
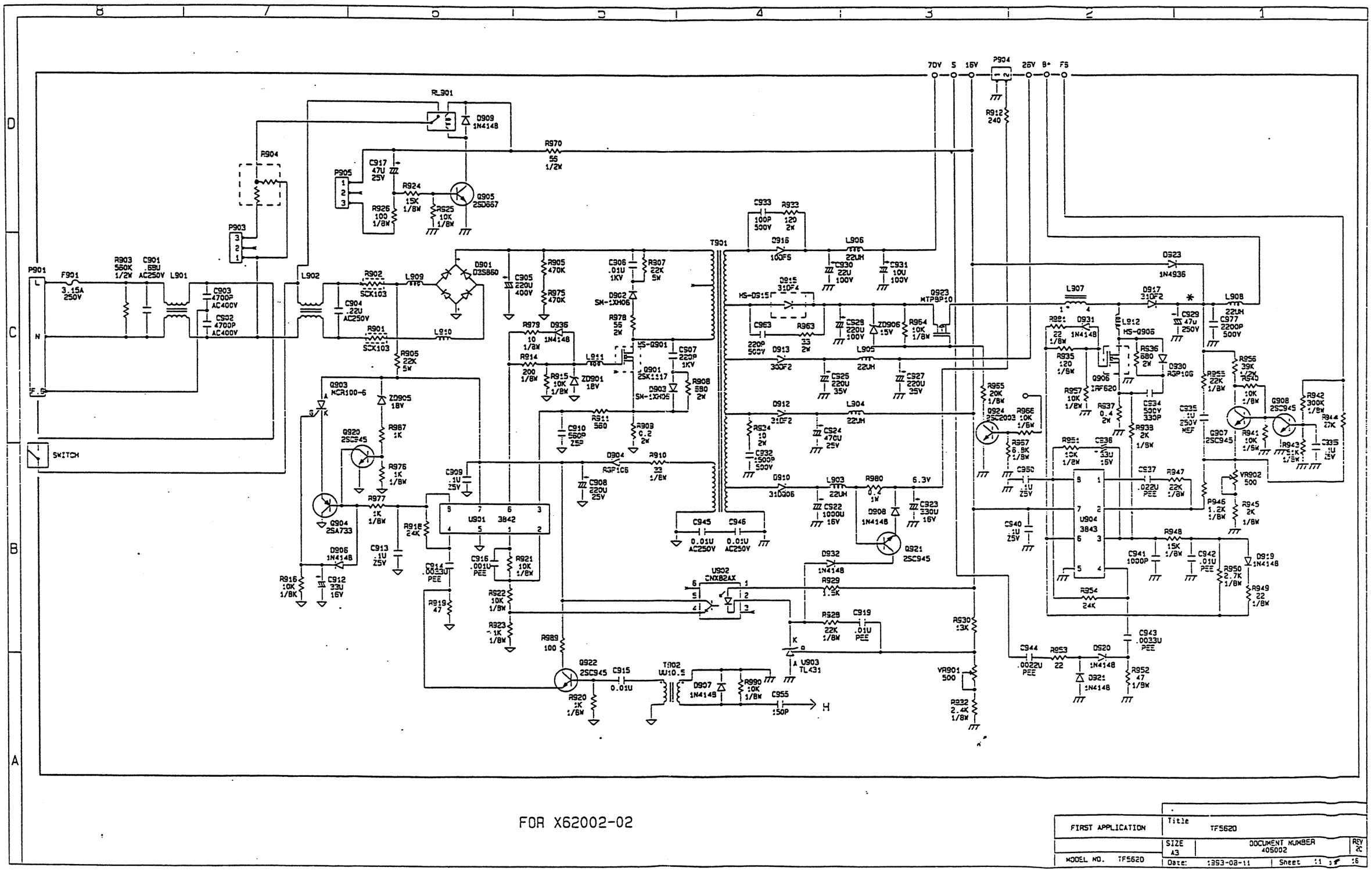


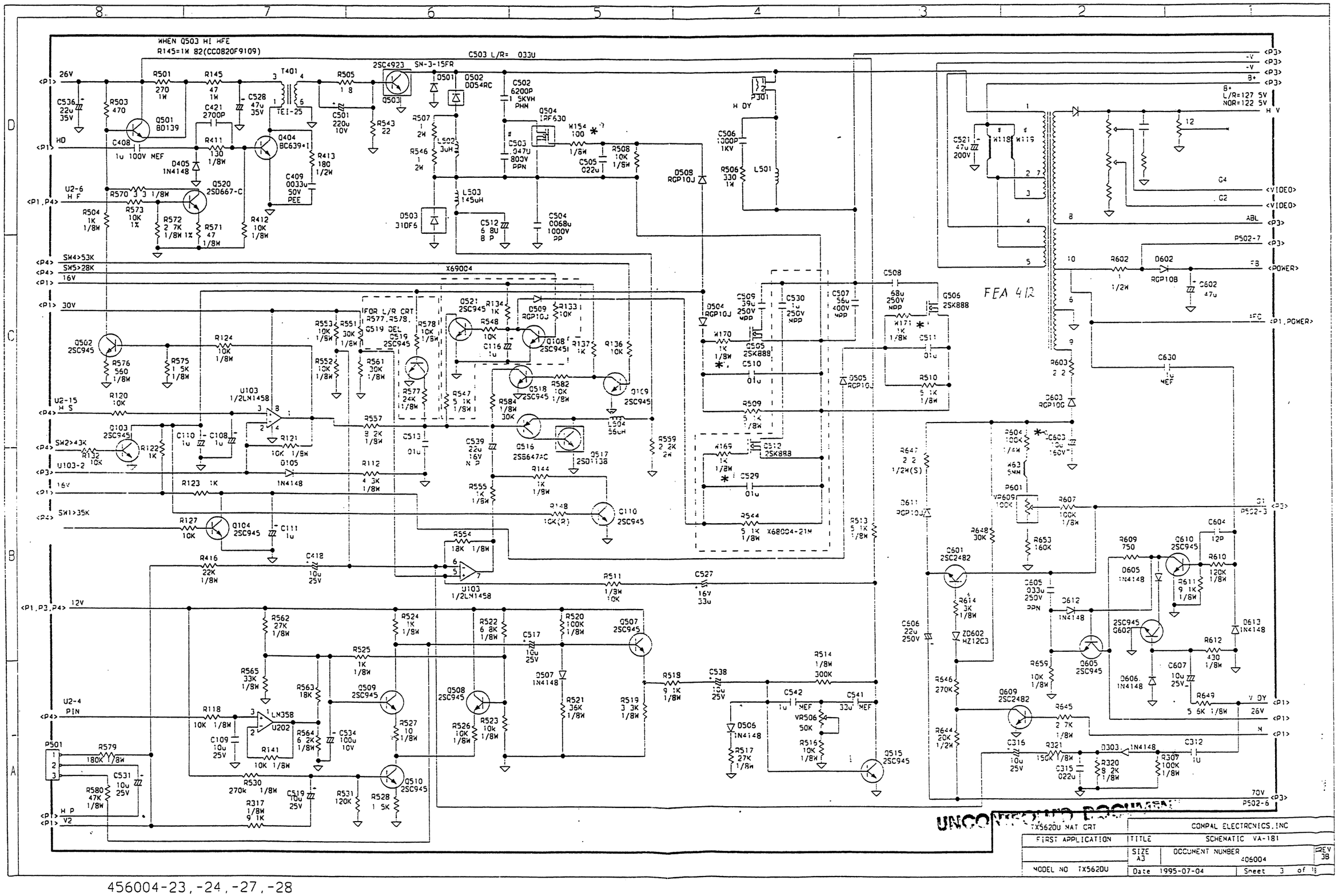
FOR X62002-01, -03

FIRST APPLICATION	Title TF5620		
	SIZE A3	DOCUMENT NUMBER 406002	REV 2C
MODEL NO. TF5620	Date: 1993-08-11	Sheet 6 of 6	

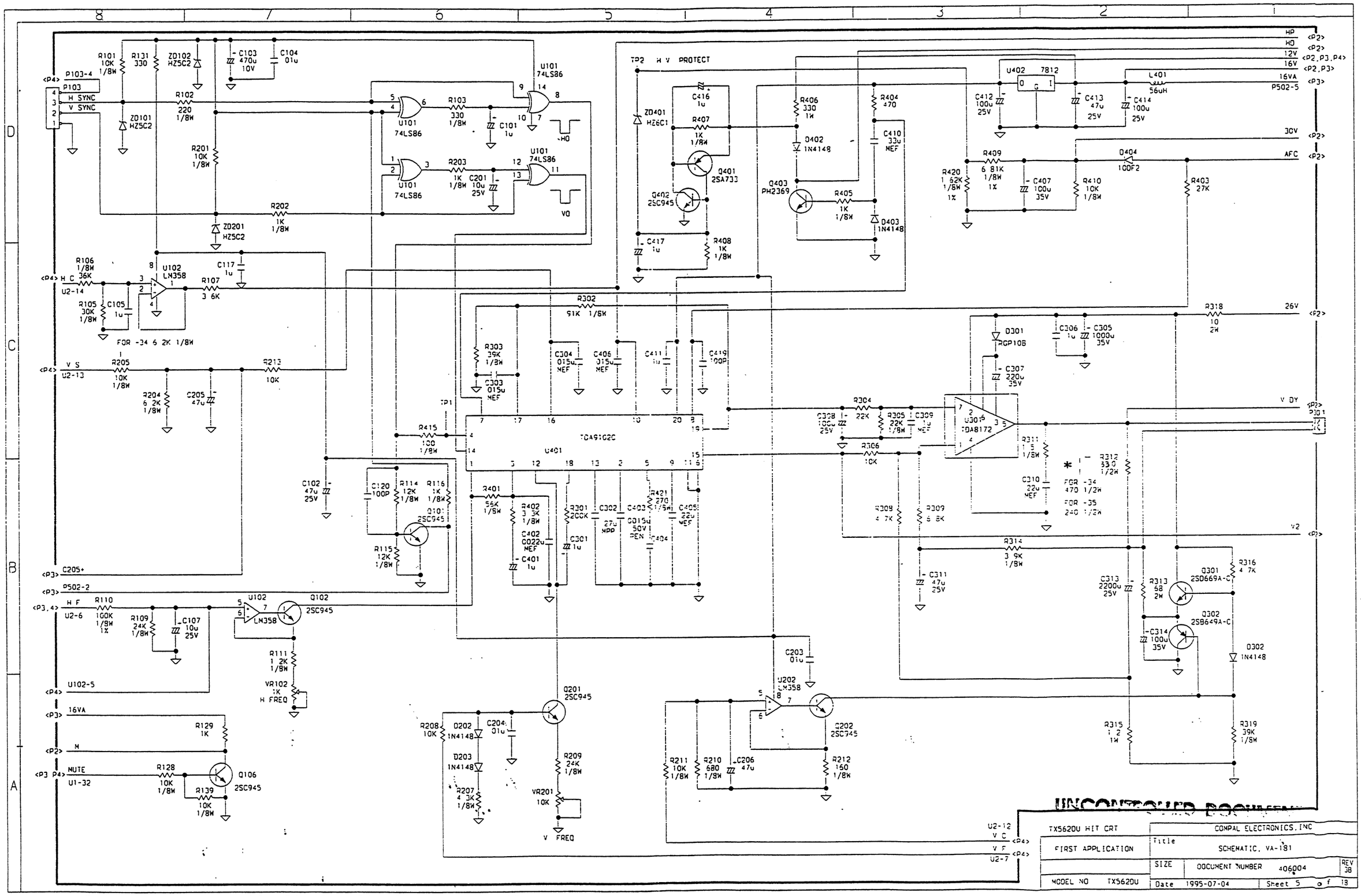


FOR X62002-02

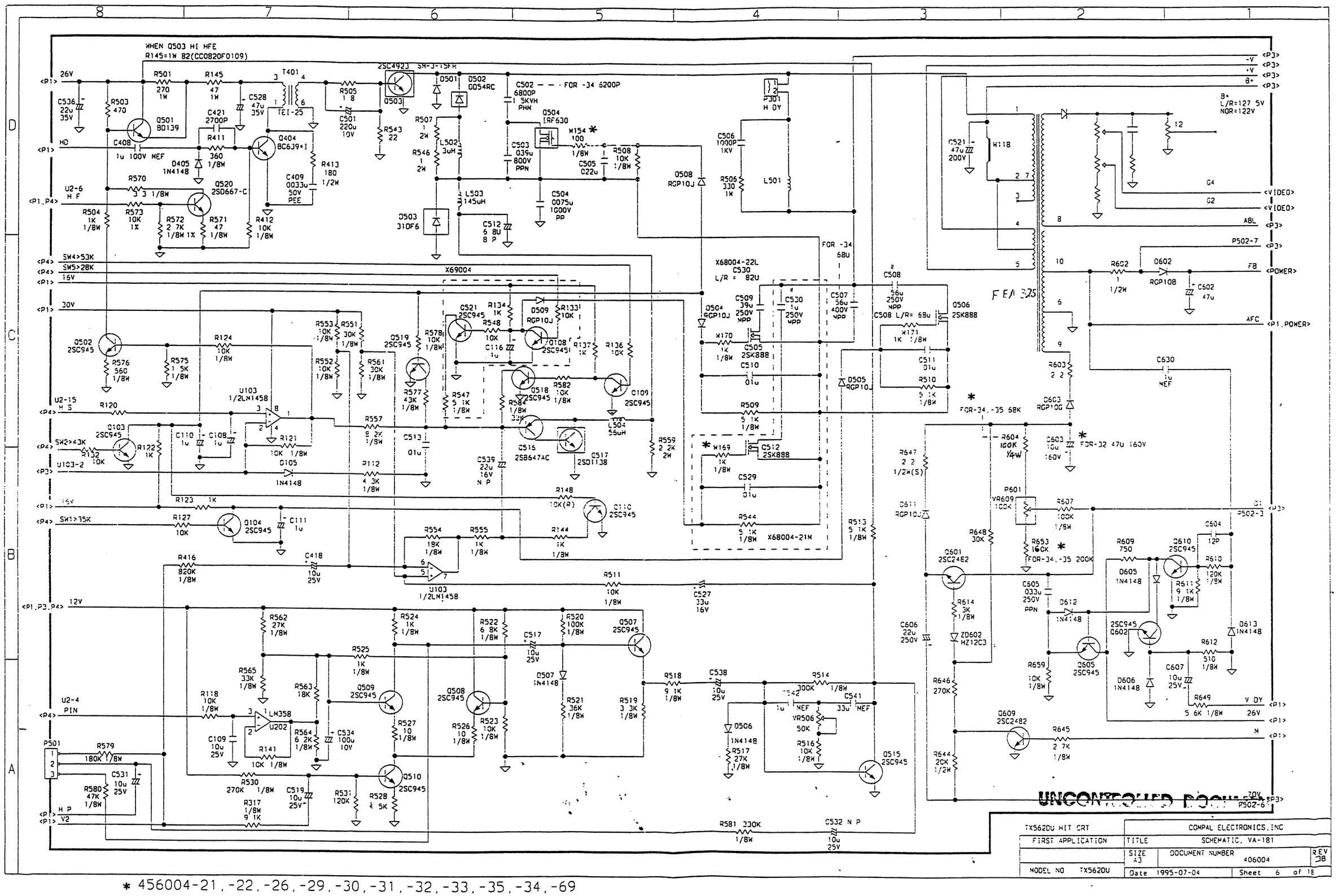
FIRST APPLICATION	Title TF5620		
	SIZE A3	DOCUMENT NUMBER 405002	REV 2C
MODEL NO. TF5620	Date: 1993-08-11	Sheet 11 of 16	



456004-23,-24,-27,-28



* 456004-21,-22,-26,-29,-30,-31,-32,-33,-34,-35,-69



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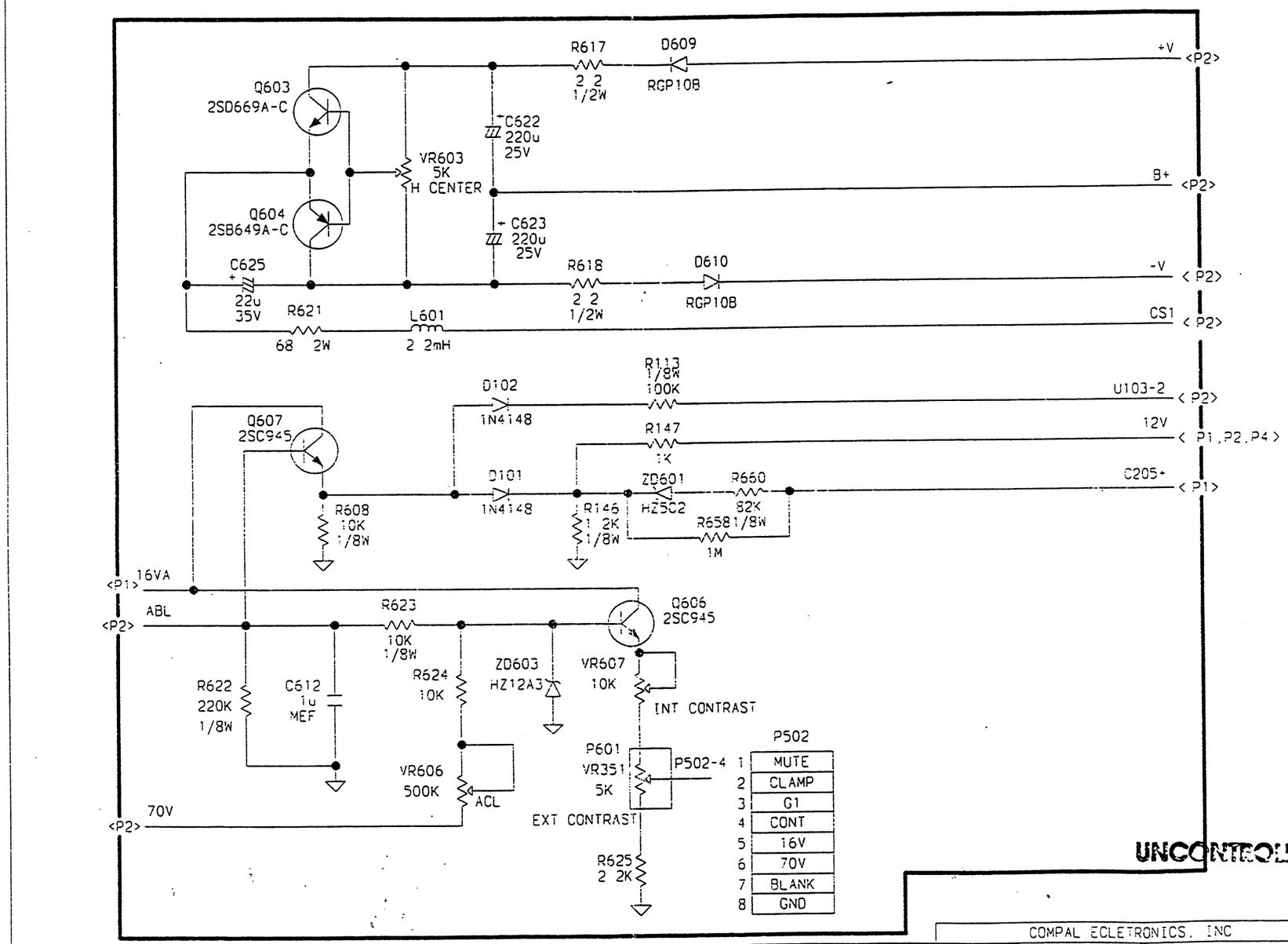
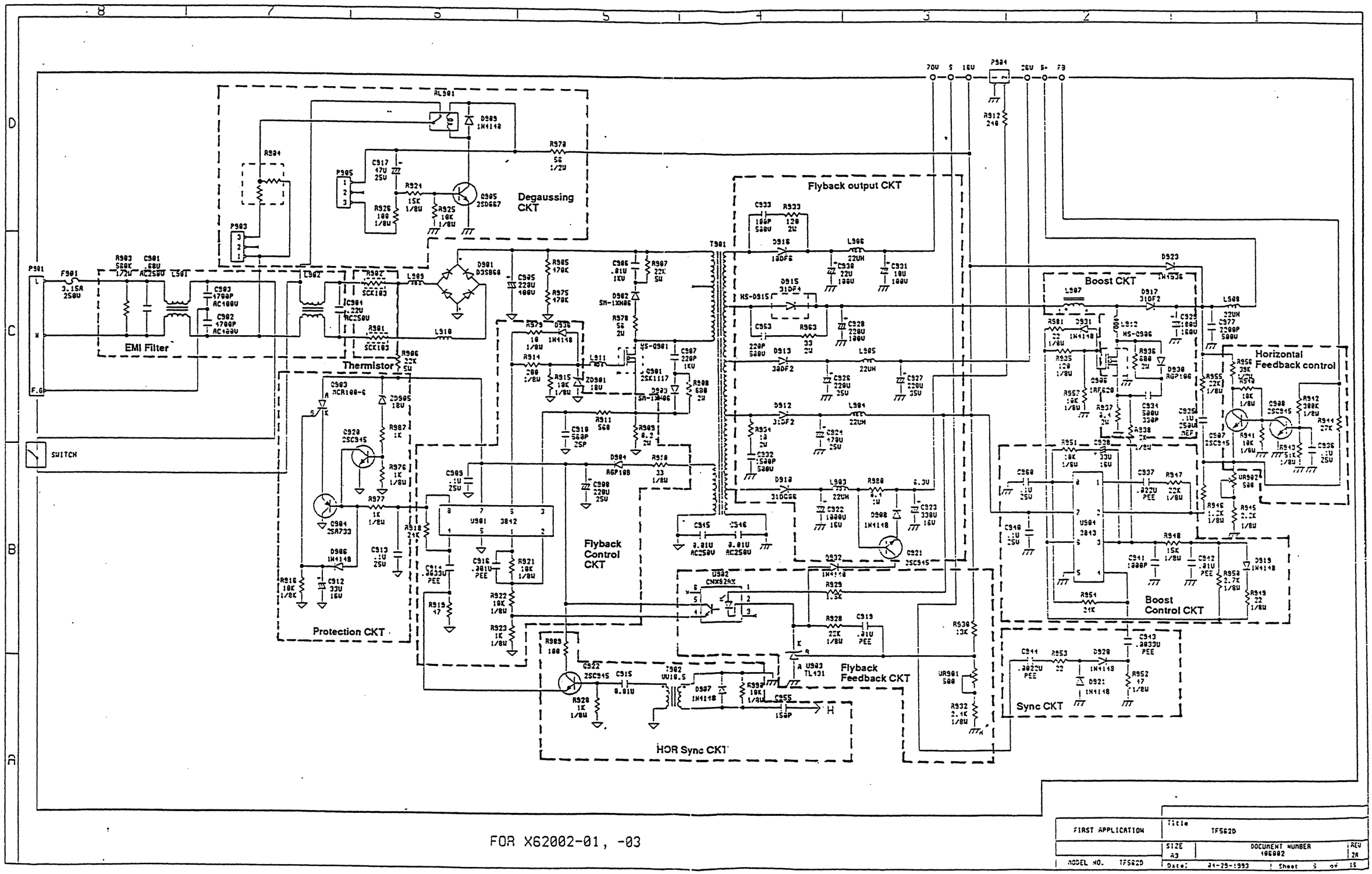


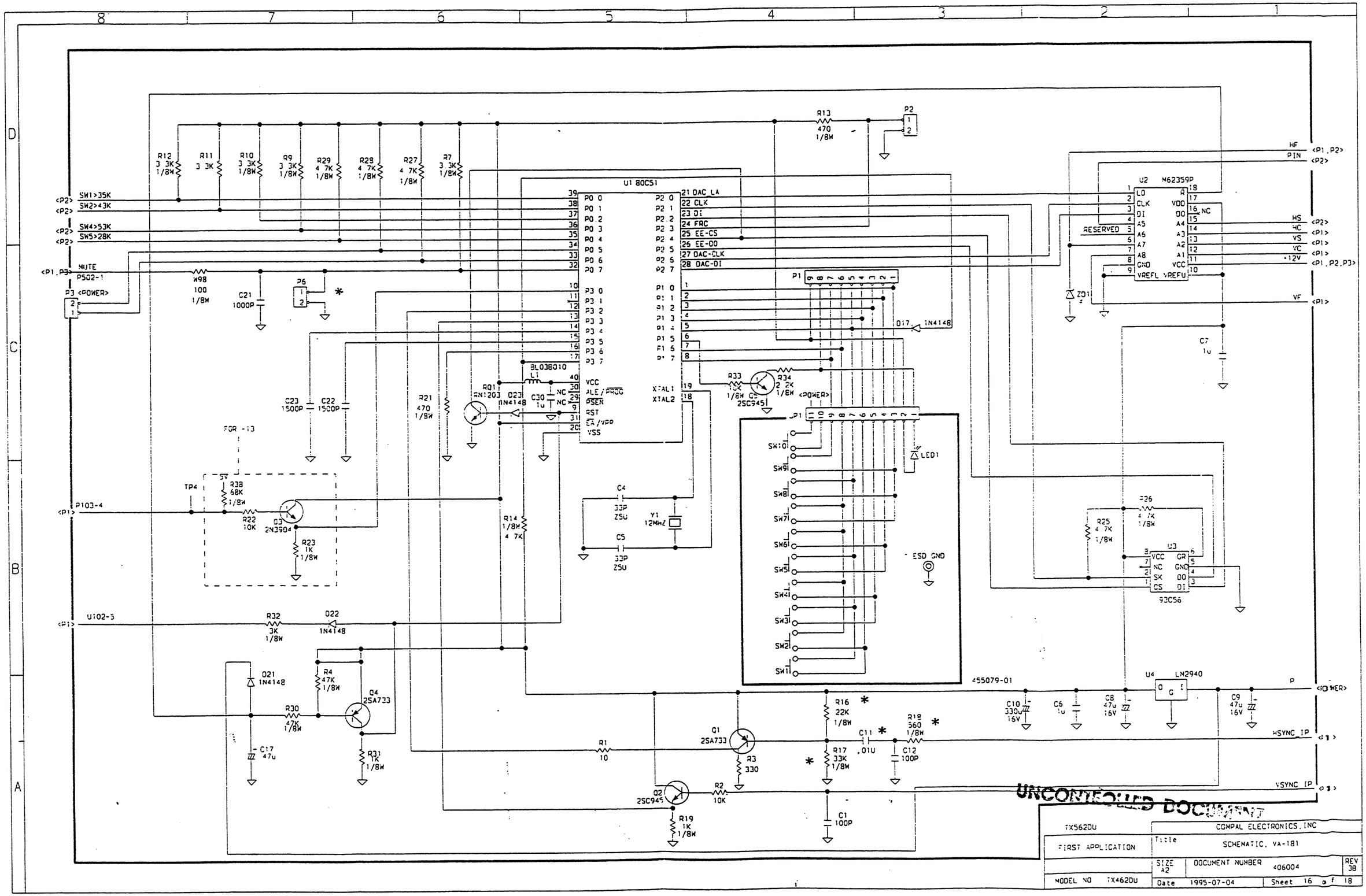
UNCONTROLLED DOCUMENT

COMPAL ECLETRONICS, INC			
FIRST APPLICATION	Title	SCHEMATIC VA-181	
	SIZE A4	DOCUMENT NUMBER 406004	REV 3B
MODEL NO TX562DU	Date 1995-07-04	Sheet 7 of 18	

* 456004-21,-22,-26,-29,-30,-31,-32,-33,-35,-69 TX562DU HIT CRT



FOR X62002-01, -03



X64004-21, X67004-11,-13

Unless otherwise specified

All the resistors are

1/8w packages

VS181

*OPTION

TILT

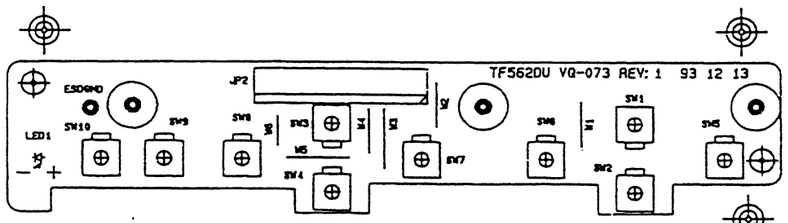
FOR 453032-01,-02

FOR X62004-21,-22,-23

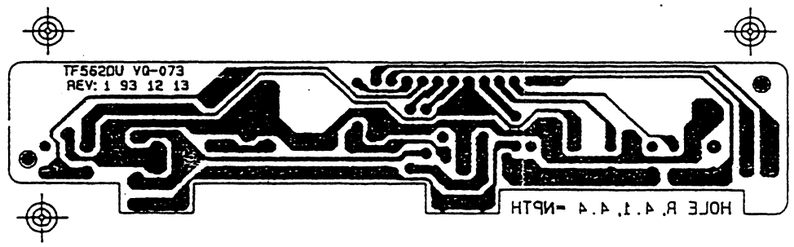
UNCONTROLLED DOCUMENT

COMPAL ELECTRONICS, INC			
FIRST APPLICATION	Title: SCHEMATIC, VA-181		
	SIZE: A3	DOCUMENT NUMBER: 406004	REV: 3B
MODEL NO: TF562DU	Date: 1995-07-04	Sheet: 17 of 18	

FOR REV RECORD SEE SHEET 1



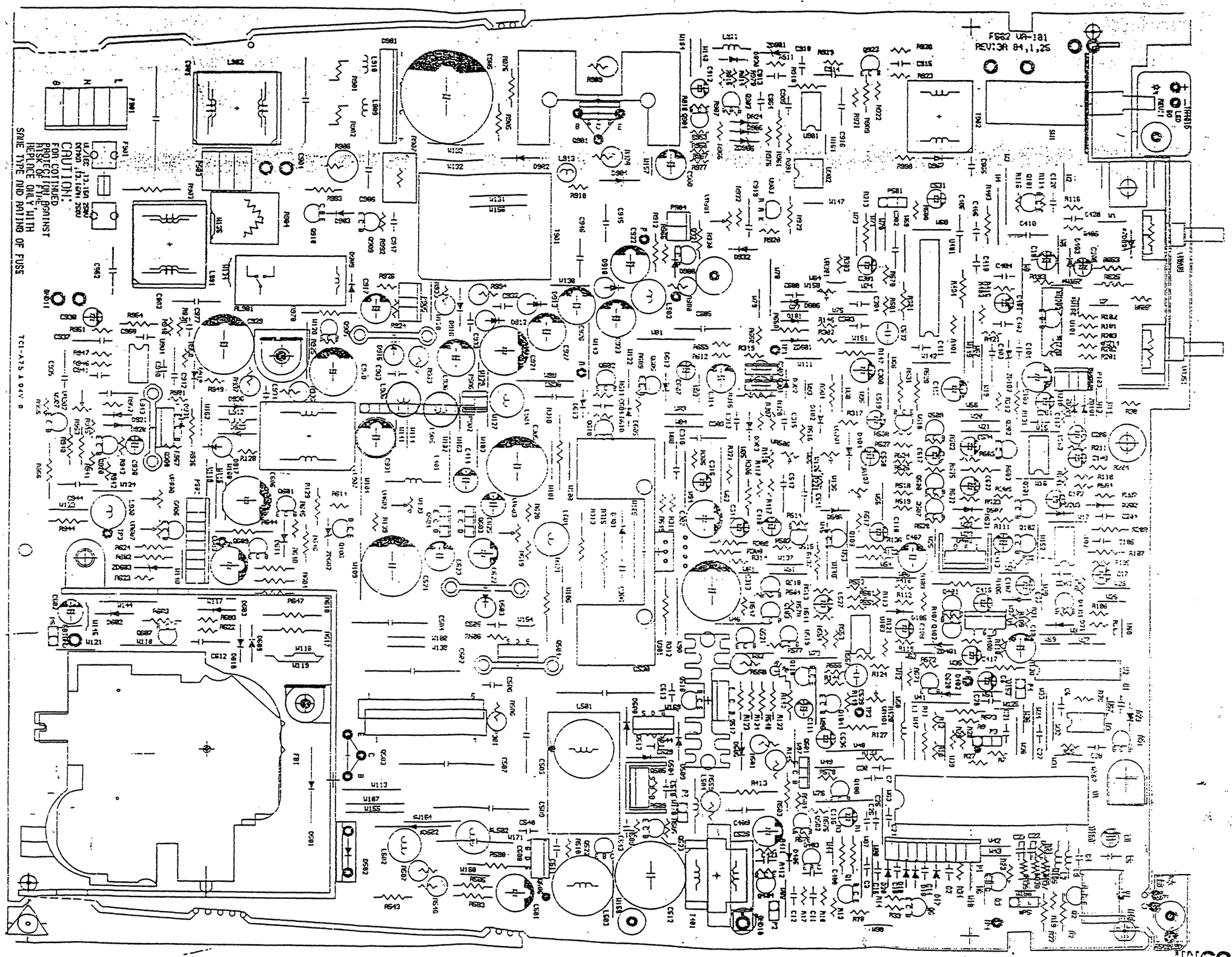
Compal Electronics, Inc.			
MODEL: TF562DU VQ-073	LAYER:	SILK	
PCB NO:	REV:	1	SCALE: 1:1
DATE: 93 12 13	DRAWN BY:	FU PL	



Compal Electronics, Inc.			
MODEL: TF562DU VQ-073	LAYER:	SOLDER	
PCB NO:	REV:	1	SCALE: 1:1
DATE: 93 12 13	DRAWN BY:	FU PL	

UNCONTROLLED DOCUMENT

FOR REV RECORD SEE SHEET 1



UNCONTROLLED DOCUMENT

SIZE	SHEET	DRAWING NO.	REV
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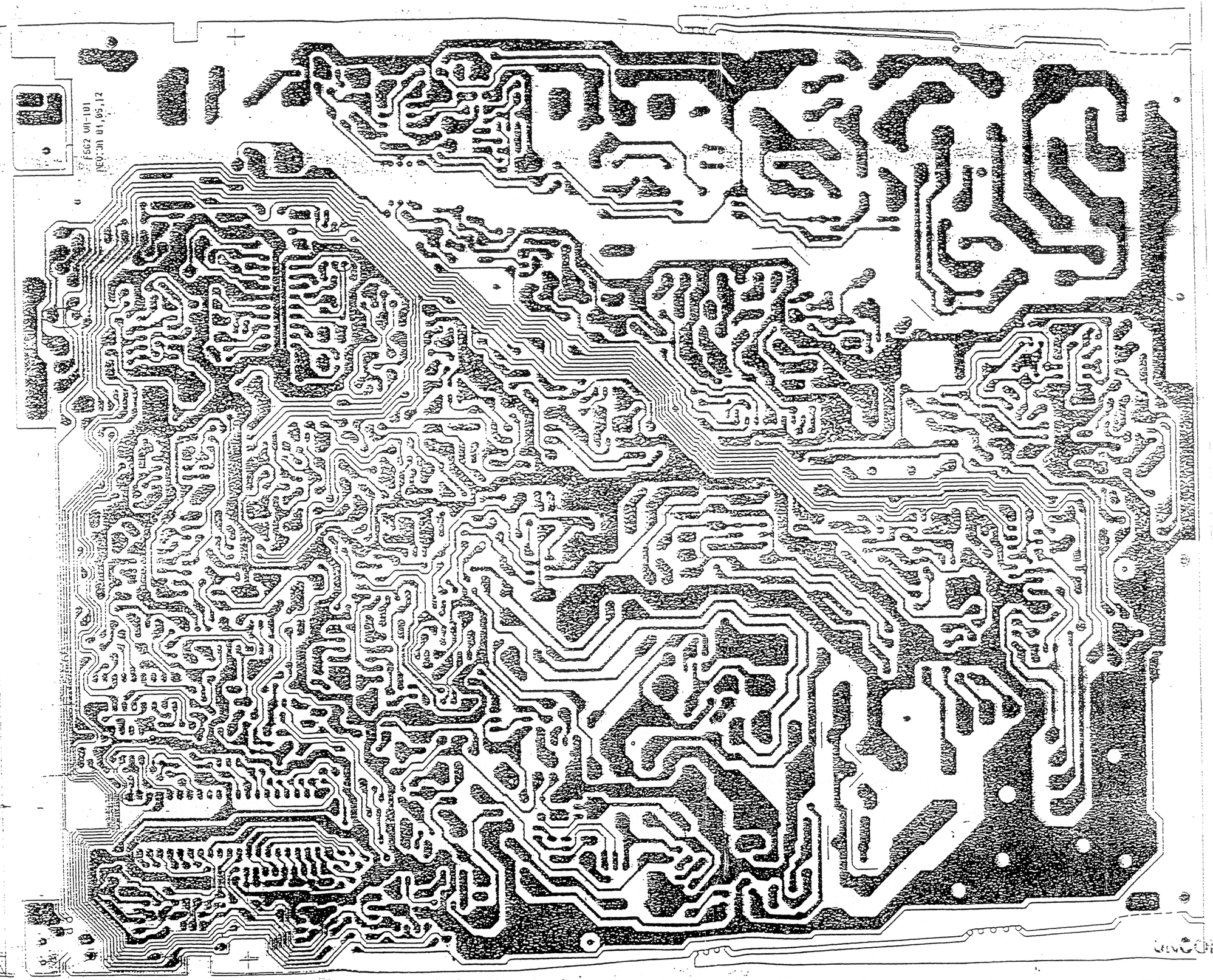
18

8 7 6 5 4 3 2 1

FOR REV RECORD SEE SHEET 1



E D C B A

UNCONTROLLED DOCUMENT

SIZE	SHEET	DRAWING NO	REV
A3	7	456004	36

8 7 6 5 4 3 2 1